DOCUMENT RESUME

ED 375 810 IR 016 863

TITLE Universal Access to Learner-Directed Education through Telecommunications: Developing the Electronic Superhighway as an Avenue for Community Learning.
INSTITUTION State Univ. of New York, Albany. Research Foundation.
SPONS AGENCY State Univ. of New York, Albany. Office of Educational Tech.
PUB DATE [Oct 94]
NOTE 152p.
PUB TYPE Reports - Descriptive (141)

EDRS PRICE MF01/PC07 Plus Postage.
DESCRIPTORS Computer Assisted Instruction; Computer Networks; *Distance Education; *Educational Cooperation; Educational Planning; *Educational Technology; Educational Television; Elementary Secondary Education; Evaluation Methods; *Instructional Innovation; Integrated Learning Systems; *Mathematics Instruction; Multimedia Instruction; Partnerships in Education; Research Proposals; State Programs; *Telecommunications
IDENTIFIERS Information Infrastructure; Internet; Star Schools; State University of New York

ABSTRACT

This proposal describes a project which is designed to demonstrate a model of learning that will deliver multimedia mathematics curriculum to learners in their homes. This model will shape and extend current integrated learning systems capacity and merge it with videoconferencing for delivery through the emerging telecommunications infrastructure. The proposal begins with the background of the project and an examination of the needs and direction of the K-12 public education system. Some learning system requirements are then identified and the State University of New York's (SUNY) public/private developmental experience is reviewed. An outline of the operational plan of the proposal includes objectives and action steps that are designed to engineer and demonstrate a technologically enhanced learning model. A management plan is also presented which includes the roles of project partners and steps in management. An assessment plan for the project is also identified and the dissemination plan for the project is described. Appended materials include letters of support from key participant organizations; a full project timeline; project staff resumes; and the detailed assessment plan. (JLB)

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Universal Access to
Learner-Directed Education Through Telecommunications:

DEVELOPING THE
ELECTRONIC SUPERHIGHWAY
AS AN AVENUE FOR COMMUNITY LEARNING

The Research Foundation of the State University of New York
on behalf of the
Office of Educational Technology, SUNY Central Administration

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Universal Access to Learner-Directed Education Through Telecommunications: Developing the Electronic SuperHighway as an Avenue for Community Learning

Project Abstract

The purpose of this proposal is to demonstrate a model of learning which delivers interactive, multimedia mathematics curriculum to learners in their homes. This model will shape and extend current integrated learning systems capacity and merge it with videconferencing for delivery through the emerging telecommunnciations infrastructure. This model will be the protype for delivering educational opportunities to multiple types of learners in a variety of environments. This model begins with the learner, emphasizing the learning theory of learner-directed education, while incorporating the new and emerging telecommunnciations technologies of the developing National SuperHighway infrastructure.

In order to manifest this learning model, which currently does not exist, this project will build upon extant relationships to create an alliance of organizations whose combined efforts are essential for this educational purpose. These organizations represent local schools, commercial technology developers and agents for teacher preparation and school reform. The outcomes of this project will demonstrate how sound learning theory and the new telecommunications technologies will increase access to learning opportunities, improve the quality of learning and teaching, and ultimately enhance the productivity of the educational enterprise.

Preface

This project is about learning, not about education program distribution. Unfortunately, learning has come to be almost synonymous with information. Providing access to information and serving as "information broker" are worthy objectives for a number of professions. However, learning is far more complex and fundamental to the human experience. This proposal is based on the assumption that learning is about how people acquire, integrate and use knowledge to construct meaning, change perspectives, guide actions and, most importantly, acquire demonstrable competencies.

This document reviews the SUNY public/private developmental experience working with school districts in Syracuse, New York, New York City and Boston that commenced in 1991. That experience was founded on adhering to sound educational practice and learning theory while using the technology and telecommunications capacities available at the time to extend learning opportunities into the home and workplace. Since beginning those efforts in 1991, there has been an unprecedented development of the National Information Infrastructure and the related telecommunications transport services capable of delivering sophisticated , multimedia interactive learning opportunities to a variety of sites beyond the traditional school.

The goal of this project is to create a demonstrable model of learning in ten urban sites in the United States that (1) uses the new and emerging multimedia learning technologies and National Information infrastructure capacities, (2) adheres to sound educational practice and learning theory and (3) delivers interactive, multimedia mathematics and other curricula into homes, the workplace and other community learning sites. Joining the promise of technology with sound learning theory is a necessary step if we are to contribute to the meaningful evolution of the learning model and engineer its shift to a higher professional order rather than simply extend the current model to thousands of students and achieve little or no lasting outcome. Because this project is focused on enhancing the learning model, rather than extending the current one, it does not propose to make hundreds of hours of programming available to thousands of students in hundreds of sites in this country and abroad. Rather, this project will first refine the learning model with the rational application of technology and then integrate that new model as a catalyst to transform the traditional public schooling enterprise into a system of learning that achieves demonstrably higher quality outcomes at a significantly higher rate of return on public investment.

Though substantial commercial development of inhome interactive devices is ongoing, the intended target application is not inhome learning. Rather, it is inhome shopping, banking and provision of other services that require interactivity and multimedia presentations. Though this circumstance demands some unique developmental support for education applications, the strength of this project is that it (1) builds upon a substantial, extant, commercial R & D fiscal support base whose product development cycles are already moving in a direction consistent with many of the education requirements and (2) merges the talents representing local schools, commercial technology developers and credible agents of enhanced teacher training and school reform. This collaboration focused on enhancing the learning model at the individual level provides a unique opportunity for investment in the meaningful reform of public education.

The coalition of organizations that has been created to lead and operate this project is rich in learning and technology capacity. Moreover, the team assembled for this project is capable and highly motivated to achieve the focused learning objectives of this project as is evidenced by their letters of encouragement and support included as Appendix A.

I. Background

The Promise

The media is filled with news of the emerging "electronic highway" with promises of a myriad of information and consumer services brought to living rooms, the work place, and schools at all levels across the United States. Economic and political viability of such potential is underscored by the frenzy in the corporate telecommunications sector to joint venture, merge, and acquire and the government exposure and support being demonstrated by the President, Vice President and many federal agencies. A recent projection by Forrester Research of Cambridge, Massachusetts, indicates that the "on-line market," fueled by data sharing and purchase of goods and services on a global scale, will grow from its current $530 million to a $3 billion industry by 1998. This, and other projections, make the economic incentives for the development of in-home, multi-media consumer services very clear.

For those of us in the education and training enterprise, the opportunity to deliver multi-media education and training to living rooms across the country via cable television, telephone services, and other emerging wireless carriers, represents an exciting new perspective on what the lucrative "home improvement" market will soon be. Students needing supplementary assistance or seeking enrichment courses; parents seeking a GED, college courses, or training to improve job skills; corporations desiring to upgrade employee competency will all soon have these opportunities delivered to homes, the workplace, and community learning centers all across the United States and beyond. New technical capacity will combine the power of the computer- assisted instruction systems and the motivational attraction of video and sound in an interactive, multi-media electronic array of lifelong learning opportunities within reach of everyone in the world. However, as professional educators, we must keep the learners and their needs as the central focus of our efforts.

Central Strategies

Nearly all public and private educational organizations from K-12 to adult continuing education have embraced the promise of these technological capacities for the purposes of increasing learner access, improving the quality of teaching and learning, and enhancing the productivity of the institution, the faculty, and the learners themselves. The efforts to harness educational technology pursued by most educational organizations incorporate several basic assumptions or strategic underpinnings. First among these is the assumption that whatever is developed that integrates the emerging technologies, the finished product or process will be educationally significant. That is, it will meet real learning needs, it will enhance or extend access either geographically or in time, it will demonstrate positive, cognitive and affective results, and it will enhance the productivity of the institutions and individuals involved. A second desirable strategic objective is making the application as widely available in the community as possible. This objective relates to the emerging shift in the role of professional educators from disseminators of information to managers of learning. The most creative of our nation's educators will view that new role as not just related to the current model of instruction, confined to classroom settings, but will have the vision to see that this new model extends to the community itself, thereby thrusting the superintendent of a local school district into the role of community learning manager. Such a role assumes that the professional educator in charge is aware of, can engineer and arrange for the capacity to deliver learning opportunities needed by local corporations, students in need of remediation, workers seeking to upgrade skills to enable new job opportunities, public assistance recipients, and family members seeking employability skills, the disabled who cannot leave their homes, non-English speaking workers, and incarcerated youth serious about reentering the job market. The new technological delivery system will indeed provide for the development of capacity that is widely applicable to a variety of learners in a variety of community sites.

The third underlying assumption of a deliberate effort to effectively deploy technology for educational purposes must be to work toward the integration of the technology in support of what we know is solid learning theory and sound educational practice. Also, it is important that educators be sufficiently informed of the technological capacities to oversee and suggest how the technologies might be integrated among themselves to most effectively address the objectives of access, quality, and productivity.

Last, as is evidenced by the foregoing assumptions, it is impossible for any current public or private educational organization to undertake deliberate and effective efforts to integrate technology without doing so in collaboration with other educational and training organizations, with organizations in the commercial sector representing the educational software and hardware development sector, and those corporations involved in the development of regional, national, and global telecommunications transport services. These underlying strategic elements of:

- educational significance,
- wide applicability and access,
- integration with educational practice and across the technologies themselves,
- collaboration among key partners,

are central to a successful effort to apply and shape the new learning technologies in support of efforts to address this country's persistent and difficult education and training needs.

II. Needs and Direction

The need to improve our system of public education and the relationship of its failings to our economic health and competitiveness is clear and needs no belaboring. One can easily recite the litany of studies and reports accomplished over the last decade that point to deficiencies in our K-12 public education system, and underscore the importance of developing a new model for learning and training in that sector. There are an array of state and national efforts labelled "Systemic Initiatives", "Systemic Reform" and "School System Restructuring." There has also been a focus of attention given by Governors and the previous and current administrations at the national level resulting in agreement regarding "national education goals". These highly visible efforts have all been undertaken because the needs are abundantly clear and the goals of this myriad of publicly funded programs are designed to address those needs. At the post-secondary sector, similar reports and initiatives have been developed, some that indicate the lack of relevance between courses of study and jobs in the market place. Other reports and findings indicate that public university systems supplement the education of entering freshmen to prepare them to achieve a sufficient level of basic skill competencies to operate effectively in their freshman year. The State University of New York spends approximately $75 million per year for this purpose.

The affect of the recession and the numbers of displaced workers have caused a tremendous need for the retraining of our manufacturing based workforce. In the corporate sector itself, education and training is reported to be an enterprise representing an annual magnitude of $40 billion.

Though the needs are clear in all of the learning sectors in our country, the initial focus of this project in the area of mathematics where a U.S. Department of Education report released in September indicated that only 16% of the 4th graders, 8% of the 8th graders and 9% of the 12th graders were able to solve and explain answers to problems that required understanding and application of math principles and operations.

In terms of pursuing applications of the new and emerging learning technologies, it is important that we draw upon the educational research knowledge base, learning theory, and what we know and have documented about good and sound educational practice. Given that context of national needs and the underlying strategic elements, any deliberate effort we undertake to apply the new and emerging learning technologies for the benefit of all learners must address the following:

- the program must be individualized and designed to dynamically respond to the learning needs as demonstrated by the competencies or deficiencies or the learner;
- there must be access to detailed learner management information including level of achievement on discreet learning objectives and competency elements relevant to the subject matter;
- there must be a high degree of multi-media interactivity;
- there must be provision for prompt and intermittent positive reinforcement;
- there must be highly motivational content and presentation modes;
- there must be the ability to extend opportunities for access to quality learning beyond traditional settings into homes, workplaces and community learning centers;
- there must be provision for the extension of learning time on task beyond that afforded by traditional institutions onsite.

Of particular importance in today's economic environment, our efforts to deploy learning technologies need to clearly demonstrate increased learning productivity and increased productivity of our teaching faculty and institutions in order to unequivocally indicate a high return on the public's educational investments. This is a particularly sensitive area since there is a growing body of evidence that illustrates the decline in school and learner performance is accelerating in the face of dramatically increasing public investment in the traditional public education model. There are also significant sensitivities to the inclusion of this element as a "system requirement" that relate to collective bargaining issues and the fear of job displacement. These are not unfounded and provide an indication of the magnitude of the barriers to be confronted. One must keep in mind that it was not the bank tellers union that fought for the enhanced consumer access and productivity yielded by the installation of ATMs across this country.

In reference to the technologies that can be integrated as tools for education and training, there seems at this point in time to be no limit on the media forms or delivery means relative to our consideration. Audio, video, computer, graphics, and telecommunications technologies all can contribute to enhanced quality of the learning experience, increased productivity, and improved access to learning opportunities. The following Figure 1 which appeared in *USA Today* illustrates an example of how one phone company views its future in the multi-media environment that integrates a variety of technologies and communications mediums. Figure 2 also indicates the activities of the Baby Bells in reference to cable and entertainment investments, thus illustrating the inevitable integration of these accessible, multi-media, highly motivational technologies.

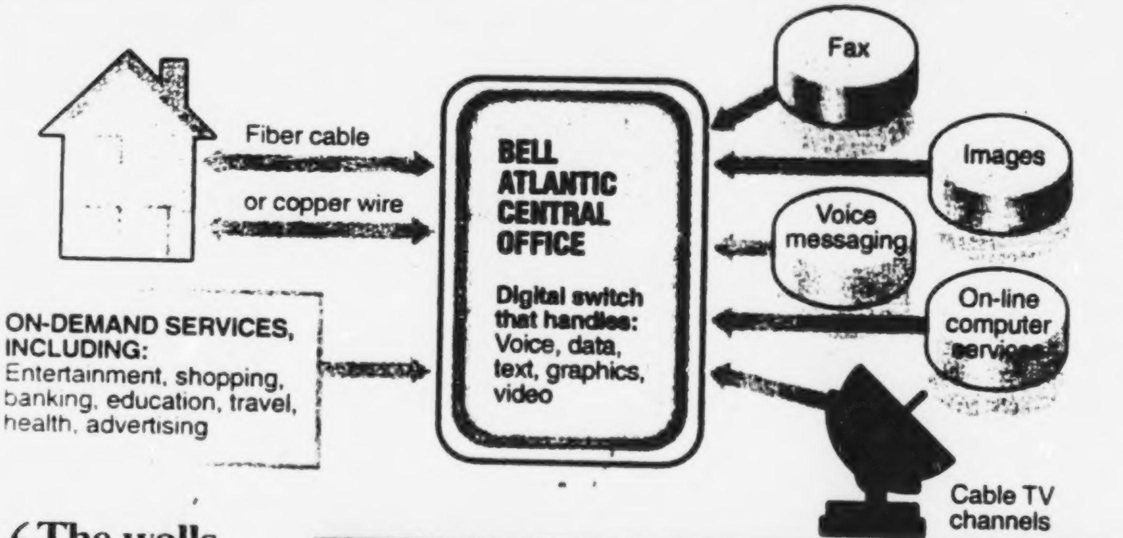
In terms of collaboration, one can see in the private sector the collaboration emerging across industries. Figures 1 and 2 provide some indication of the extent to which industries are considering merging, being acquired, or pursuing significant joint ventures to position themselves for the future of integrated technologies. Public education can ill afford not to pursue similar collaborative efforts designed to shape the applications of these new, integrated, multi-media technologies to directly support education and training activities. Such collaboration can insure that the requirements of the education and training enterprise in this country drive some consideration of the capacity of the new and emerging technologies to deliver learning opportunities in their most sophisticated form to a variety of sites.

FIGURE 1

Ruling opens door to union of telephone, cable, video

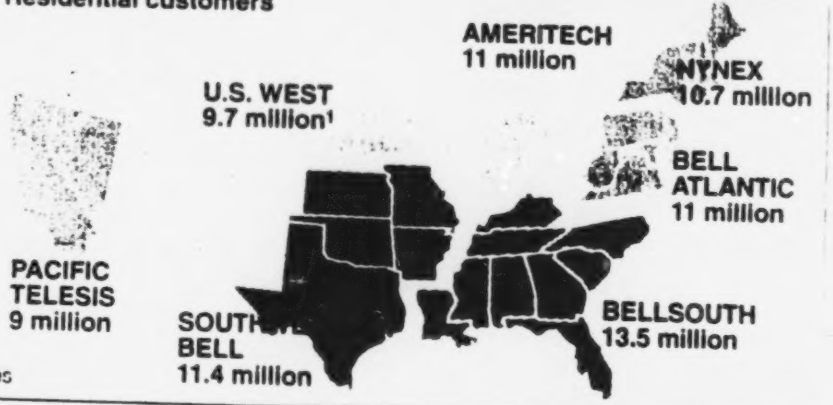
How Bell Atlantic sees the future

The regional phone company plans to offer everything from ordinary phone conversations to interactive services, such as movies-on-demand, via existing phone lines and a fiber-optic cable network it wants to build. A simplified view of how the network might look:


Fiber cable
or copper wire
BELL ATLANTIC CENTRAL OFFICE
Digital switch that handles:
Voice, data, text, graphics, video
ON-DEMAND SERVICES, INCLUDING:
Entertainment, shopping, banking, education, travel, health, advertising
Fax
Images
Voice messaging
On-line computer services
Cable TV channels

THE SEVEN REGIONAL BELL COMPANIES

Residential customers


AMERITECH
11 million
NYNEX
10.7 million
U.S. WEST
9.7 million[1]
BELL ATLANTIC
11 million
PACIFIC TELESIS
9 million
SOUTH
BELL
11.4 million
BELLSOUTH
13.5 million

> “The walls are coming down and here’s one of the bugles being blown.”
>
> — Gus Hauser, who runs Hauser Communications, a cable company in Bell Atlantic’s territory

[1] — Number of residential phone lines

Source: Bell Atlantic, USA TODAY research

By Marty Baumann, USA TODAY

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FIGURE 2

Baby Bells' activities in the cable and entertainment industries

	1992 REVENUE (billions)	1992 OPERATING CASH FLOW* (billions)	CABLE/ENTERTAINMENT VENTURES SO FAR
Ameritech	$11.15	$4.38	—
Bell Atlantic	12.68	5.05	Has five projects to deliver video programming in New York, New Jersey and Virginia
BellSouth	15.15	6.21	—
Nynex	13.16	5.05	Invested $1.2 billion in Viacom; is also the largest cable provider in the United Kingdom
Pactel	9.95	4.04	—
SW Bell	10.02	4.12	Owns cable properties in U.K., Israel; is buying two cable operations near Washington, D.C.
U S West	10.28	4.29	Bought 25% stake in Time Warner, owns cable properties in U.K., France, Hungary, Norway, Sweden
TOTAL	**82.39**	**33.13**	—

***Operating cash flow is revenues less operating expenses excluding depreciation and amortization**

Source: Kidder, Peabody & Co.

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Where Are We Now? (Myth and Reality)

At the institutional level we have seen an evolution over the last decade and a half that began with online access to services such as Plato and other mainframe driven education and training applications. That evolution moved through phases that included widespread use of stand alone microcomputers (which significantly complicated the life of teachers all across the country) and the "broadcast" of learning at the elementary and secondary levels on a national scale. Now the evolution seems to be moving from an integrated learning system approach to the vision of fully integrated multi-media in an interactive mode delivered in ubiquitous fashion via a variety of telecommunications mediums. This evolution in the public education sector has been fraught with misunderstanding, overselling by the public and commercial sectors, and public sector expectations considerably out of line with public fiscal and technical capacity. As this evolution of learning technology applications moves further into a distance learning arena that draws upon multi-media delivery systems, including satellites, it would be well for us to keep in mind some of the historic difficulties caused by the difference between the technology myth and the reality of its applications and the demonstrable return on the public investment.

For example, in the 1980's, with the widespread introduction of microcomputing, public education, parent/teachers associations, and alumni groups went so far as to hold bake sales in order to purchase microcomputers for their children's classrooms. State education agencies all across the country measured the degree of their resident public school commitment to technology (and supposed return on public investment) by a ratio illustrative of students per microcomputer at the district and state levels. This metric did not take into account the fact that software may not have been educationally sound and that, from a classroom management point of view, these stand-alone microcomputers caused chaos for teachers seriously trying to make a difference for their students in the classroom. The rush to use and install stand-alone microcomputers resulted in teachers struggling to find acceptable software. Having found that software, students worked individually and thus, if time were available for all students to use the microcomputer(s), at the end of the school day, 25 separate students disks held the secrets of how each student performed. Unlocking those electronic student progress reports required that the teacher use the stand-alone computer in the building (or have one at home) so she could ascertain what students had done while using the computer. In time, as networking technology improved and multi-disciplinary integrated learning systems emerged with graphics and sound, learner management information was captured automatically and detailed reports available at the individual class or school district level.

Now at the K-12 and post-secondary levels, we see a similar evolution with what is popularly known as "distance learning." The most widely used distance learning model today consists of satellite distribution of a live teacher with two-way audio interaction between teacher and distant students made possible through audio bridges and remote telephones. These services are frequently augmented by the use of voice mail, electronic mail, computer conferencing, keypad response devices or voice mail systems, to allow for student-to-student or student-to-faculty interaction at times other than the airing of the live instructional broadcast. This model, augmented by computer and telephone interactive technology, is a basic broadcast model. It is a model that originates a live teacher in one location and distributes the signal to multiple locations equipped for interaction through phone and other technologies. This model, unlike those associated with the use of more sophisticated computer assisted instruction models, does not, as popularly advertised, create a "paradigm shift." Indeed, the traditional instructional paradigm remains essentially unchanged.

Rather than shifting it to a new and improved instructional paradigm, the popular distance learning model merely extends the current paradigm which has been in place for over 200 years. One reason why all of the expenditures and enormous amount of human resource commitment has left the traditional instructional paradigm essentially unchanged is because the initiatives were not accompanied by an adequate effort to examine "taken for granted" beliefs about instruction, learning and the contexts where these might effectively take place. Therefore, the technology has been for the most part an add-on, as an instrument of instruction, and not a mechanism and opportunity for dynamic change and transformation of the public education model at all levels.

It must be pointed out that though the current distance learning model does not create a meaningful (and much awaited and often cited) paradigm shift, it has provided access to education and training opportunities that might not have otherwise been available to public school students, working adults, or corporations for improving employee performance. However, as educators, with the objective of enhancing educational quality, access and productivity, and with the desire to apply the learning technologies in a creative way to support educationally sound practice, this extension of the traditional model is not sufficient and cannot be our goal. In point of fact, the extension of the current model through the popular configuration of distance learning is diametrically opposed to many elements of what we know to be good learning practice supported by substantial educational and learning theory research.

For example, the broadcast model of distance learning does not increase individualized programs that adjust dynamically to student learning performance. In fact, the current distant learning program in the broadcast model significantly decreases the individualization of programs and substantially reduces the degree to which a student can be interactive with his or her teacher. In addition, the programs are frequently of little motivational value, do not have any provision for addressing prompt or intermittent reinforcement, do not extend time on task, and do not provide individual or group information related to student performance on discrete learning objectives or related to specific student competencies and do not capitalize on the technology to extend learning beyond the traditional learning sites. In short, what has become extremely popular across the country and supported by $ millions in federal, state, and local public funding is truly not founded in sound educational theory, practice, or research. Perhaps most disturbing is the fact that this enormous investment in the application of educational technology has not contributed to improved pedagogy or a shift in the instructional paradigm to achieve the objectives related to enhanced quality, learning productivity or the National Education Goals.

Unfortunately, getting caught in the myth of the microcomputer or distance learning solution to our difficult and persistent public education problems brings with it a loss of context and a diversion of substantial resources away from the true mission of public education. The focus becomes superficial and reflects frequency distributions and broad geographic (political) reach as measures of effectiveness. Unfortunately, those numbers quickly become accepted as a replacement for qualitative learning data and true measures of return on public investment.

For example, popular distance learning programs and projects today typically site as a level of "effectiveness" the number of sites they reach, the number of states in which the signal is received, the number of students participating in the courses, and the number of hours of programming offered. This data has little or no relevance to the quality of the program, the level of productivity of the student or faculty member, the competencies achieved by the learner or the resultant return on investment for the citizens of this country. It is ironic that we as educational scientists get caught in the flow of technology use to a point where we use such imperfect and misleading measures and cite such irrelevant data to justify the expenditure of our public dollars. All public and private enterprises have a propensity to apply technology, and sometimes do so prematurely and for the wrong reasons. However, in this case, there is clear evidence that the application of technologies and the commitment of significant public investment, though addressing an objective of instructional access, is contrary to accepted learning theory and practice and merely extends an ancient and outdated model.

Our continuing pursuance of these models seems to illustrate that we have lost our identification with the basic mission of our educational and training enterprise and neglected our obligation to protect the public investment. Public education exists to provide quality educational experience. Quality must be is defined by what the body of assessment and research data indicates. In short, quality education must yield competencies at the learner level. Those competencies are demonstrated by learner performance. Ultimately, that performance is reflected as productive work in the workplace. That productive work contributes to a competitive enterprise, one that likely contributes to a healthy economic environment. A healthy economic environment is a major characteristic of a mature and peaceful society. If we continue to merely extend the traditional instructional model with technologies that have the power to do so much more, we must realize that in so doing, we lose touch with the goal of our profession and neglect the focus on the individual learner. Since education is the prerequisite and essential foundation for achieving the valued outcomes related to competencies, performance, productive work, a competitive organization and a healthy economic environment, our loss of focus on mission can have devastating effects on this country's economic health. As we move forward in our attempts to effectively apply the new and emerging technologies to the learning enterprise, we must not lose the focus on the individual learner regardless of age, level of learning, or location. Our recent history in the technological arena indicates that we have lost that focus and it is time to renew it.

III. Some Learning System Requirements and the Initial SUNY Experience

Taking into consideration the direction of the new technologies and the ability to integrate them, and considering what we do know about educational needs and sound educational practice, SUNY determined that there are several requirements of a systems design that should be adhered to as we engineer the new learning environment. Some of these requirements are:

- system design provides for the teacher as architect and manager of learning experiences;
- learning experiences tailored to the learner;
- use of multimedia technology;
- real time interaction, simulation, and feedback;
- extension of the traditional learning day and the traditional learning year;
- basing success and progression on achieved competencies rather than temporal measures;
- prompt assessment and reinforcement;
- capacity to extend the full sophistication of the learning system beyond the traditional school site and into the community;
- ability to handle content in a multi-disciplinary mode;
- presentation of material in various sensory modalities with preference determined by learner performance;
- presentation of learning experiences through varied strategies to include problem solving and exploratory learning.

With these learning system requirements in mind, the new environment for applying this system extends well beyond the traditional school setting. The new and emerging learning technologies allow for delivering sophisticated learning experiences to a wide variety of audiences in a wide and varied number of settings. **Figure 3** indicates the kinds of audiences and locations for which the system should be designed. Though the new and emerging systems will have a capacity to reach multiple audiences in varied settings, if the public education system is to embrace these new technologies and capacities, they must build from the current traditional system in the classroom (**Figure 4**) to a community wide learning environment (**Figure 5**).

Developing Public/Private Partnerships:

In seeking to address these system requirements and the ability to extend learning opportunities into the community level, the State University of New York (SUNY) developed a working relationship with Instructional Systems Incorporated (ISI), the distributor of Computer Curriculum Corporation (CCC), computer-assisted instruction in New York, Massachusetts, and New Jersey. This relationship was established because (1) it was determined that many of the requirements set forth above were met by the CCC system (see **Appendix B** for system description), (2) a Department of Education Survey (1991) indicated that CCC was the ILS (integrated learning systems) used by far more New York schools than any other and (3) that when complemented by the capacity of the State University of New York to deliver live teachers, there began to develop an interesting new model of integrating CAI with cable/satellite delivered instruction.

A cooperative developmental relationship emerged in 1991, the purpose of which was to determine how, with then current technological capacity, SUNY and ISI might begin to move the instructional model to more closely approximate the requirements set forth above. In pursuing that model, the deficiencies of each of the stand-alone capacities were addressed, in particular those of the SUNY distance learning model which adhered to the broadcast design discussed above. Developing this design also provided the opportunity for

FIGURE 3

STATE
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Computer Assisted Instruction With Live, Interactive TV Teaching

A Cooperative Research and Development Project
of Instructional Systems Inc.
and the State University of New York

For Whom

- K-12 students at risk of failure in traditional educational settings
- Postsecondary students in need of remediation
- Workers seeking new job opportunities
- Public assistance recipients and members of families seeking employability skills
- Disabled persons
- Marginally employed workers
- Non English speaking workers
- Incarcerated youth reentering the job market
- Probationers and parolees

Where

- Home
- Workplace
- Colleges and universities
- Public and nonpublic schools
- Libraries
- Community-based organizations
- Correctional institutions
- Human service providers
- Skills center

FIGURE 4

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The Technology-Enhanced Learning Environment

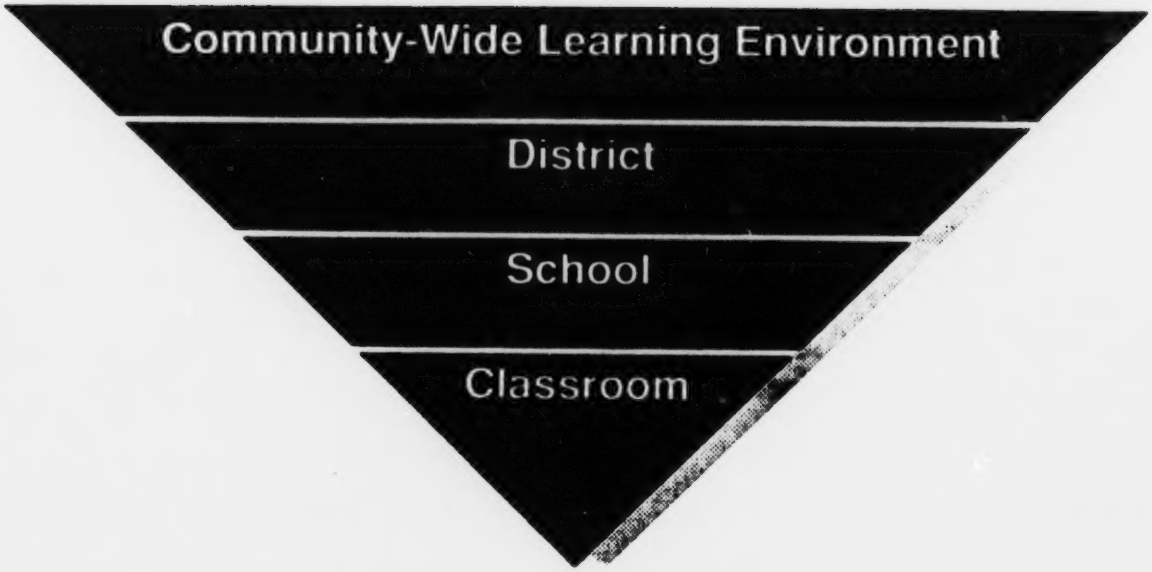
Community-Wide Learning Environment
District
School
Classroom

FIGURE 5

STATE
UNIVERSITY
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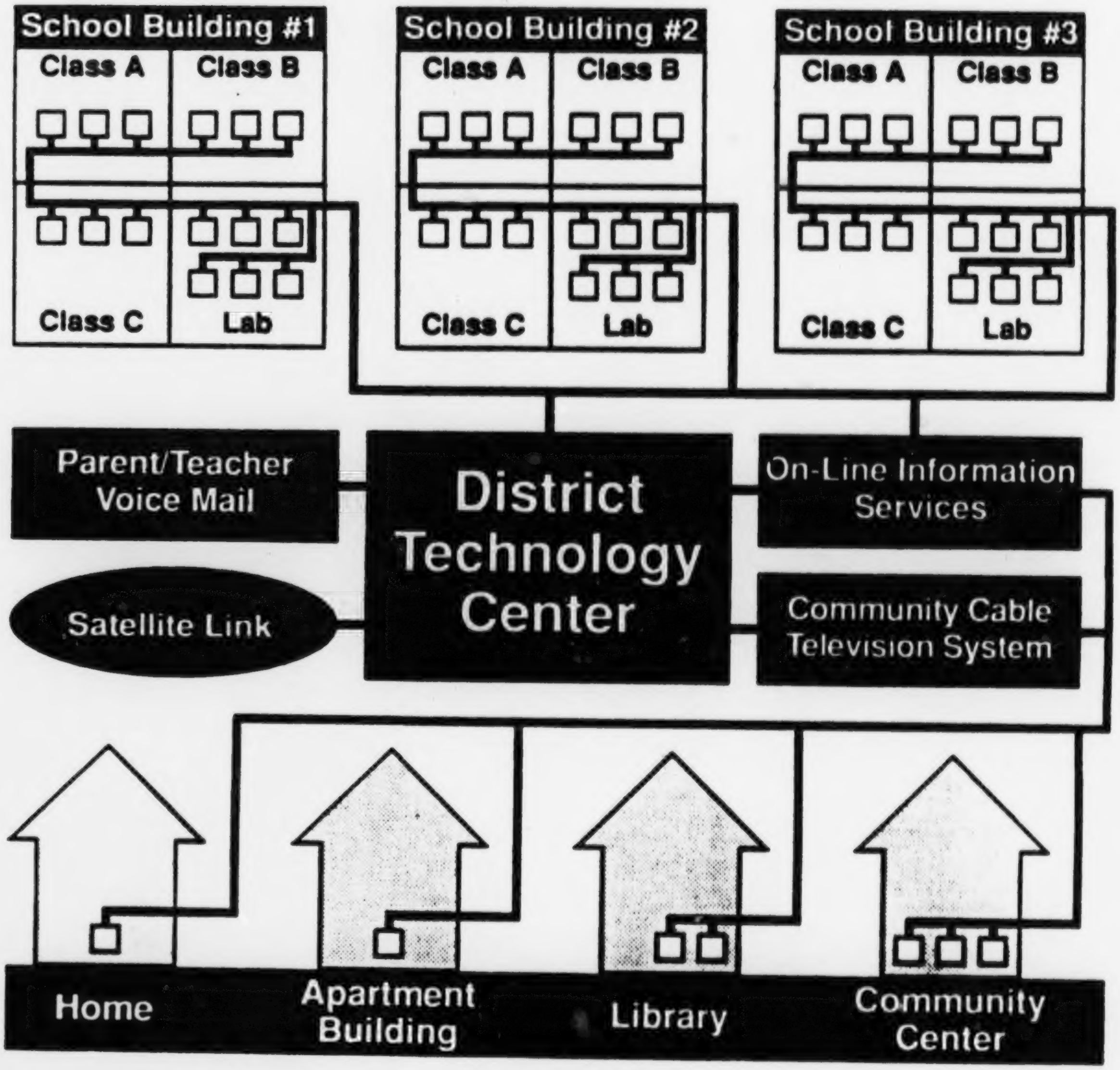
Community-Wide Learning Environment


School Building #1
Class A
Class B
Class C
Lab
School Building #2
Class A
Class B
Class C
Lab
School Building #3
Class A
Class B
Class C
Lab
Parent/Teacher Voice Mail
District Technology Center
On-Line Information Services
Satellite Link
Community Cable Television System
Home
Apartment Building
Library
Community Center

SUNY to gain experience in a new educational frontier where teacher training requirements would be drastically changed. This experience was deemed to be necessary if SUNY and its teacher training institutions were to keep pace with what promises to be a true shift in the instructional paradigm.

The SUNY/ISI collaboration was manifested in the Syracuse City School District at Nottingham High School, where it was determined that the mathematic content area was of highest priority. Therefore, the Math Sequence I curriculum was selected as the focal point for these developmental efforts since it also represents an area of high priority on the national level. In order to extend the learning opportunity beyond the school and into the home, it was decided to use laptop computers. Though the full multimedia capacity of the CCC system would not be available via phone lines to the home, it was determined that **in this initial stage the technology would be used to its current capacity to achieve the requirements**. To add the element of the live teacher into the home, the participation of Adelphia Cable Communications was solicited to provide one hour a week during the school year. Thus, Nottingham High School created a program known as "Mathematics TV Teacher" aired for one hour every Wednesday evening that school was in session. The live TV teacher used the CAI student management information collected from school and with laptop use in the home to make determinations as to what content would be focused upon in the one hour weekly sessions. Thus, the one hour was not a prearranged program planned weeks in advance, but rather a program driven by the performance of students as reflected in the student management information collected by the CAI system. Though the program was available to all students in the community via the cable system, the content was of particular relevance to those students participating in this pilot developmental project since it was derived from performance data that illustrated where the learning deficiencies were for those particular students.

There are many elements of this extended learning environment that are departures from the traditional educational model. For example, taking home valuable computer equipment for use in the home required the acknowledgement and participation of parents in this experiment. This additional degree of responsibility required considerable forethought to execute efficiently. Most parents were extremely enthusiastic about the participation of their children and equipment loss and damage was minimal. The project was designed to extend the school day and learning experiences for those students in Math Sequence I deemed at risk of failing. Therefore, this experiment was an attempt to directly address the learner needs and was viewed as a positive step by school professionals, parents and surely by Adelphia Cable, which provided the air time for the live teacher.

Preparing the teachers to participate in this multimedia project, which included appearing and "performing" on television also required considerable effort. SUNY, in conjunction with the SUNY College at New Paltz, the New York State Theater Institute, and television production staff at SUNY's New York Network, developed an institute consisting of a five day program entitled, "Teaching and Learning on Television," which included topics related to the methodology and pedagogy of distance learning, resources for TV teachers, copyright and intellectual property issues, performing for the camera, production of video-based instruction, and familiarity and use of the computer assisted instruction program. This program was offered as a summer institute in 1993 (see Appendix C). It was attended by the Syracuse teachers participating in the project, as well as by teachers from districts in New York City and Boston who are implementing the program in 1994.

Though this initial effort commenced in 1991 as an application of what technology existed then, and therefore, used delivery via cable and phone system to accomplish, recent developments indicate that we will soon be able to achieve a vision such as the following which is the goal of this project:

Karen Johnson is a fourth grade teacher in Buffalo, New York. She has been trained on a sophisticated integrated learning system that includes a high level of student motivational, interactive, video, graphics and audio reinforcement. Karen's students used the system at school and in their homes. Some of Karen's students are adults and they use the system at their workplaces. The home and workplace access has been provided by the cable company that serves Buffalo through the magic of fiber optics and digital compression techniques. Since in-home systems are not expensive, they have been provided to students deemed to be at risk of failing and funded by Chapter 1. In the workplace, those employees most in need of basic skill competency upgrading were selected and that program is funded by state and federal workplace literacy programs. Karen is able to easily monitor the progress of her 125 students by virtue of the student management data that is collected and reported to her at regular intervals she has predetermined. In this case, the "electronic report cards" go to her, not two or four times a year, but weekly. These reports indicate precisely where each learner is having difficulty on a series of objectives and Karen can ask that students having similar difficulties be listed for her so she can target some special attention to those specific learners. In order to provide congruence for the students with the computer curriculum and their classroom curriculum, Karen is able to use the student CAI reports to create an individual education plan (IEP) for each student. For one or several students having been identified as having difficulty, Karen, through her system interface, asks that the next time the student "signs on," that she be alerted through an audible "urgent message" indicating that the student in need is on the system. When so notified, Karen enters the student ID number *and requests access to the student's active screen. In seconds, Karen appears in a video window on the student's workscreen and ... "Hi Sally, I see you are having some difficulty with multiplying fractions. Let's see if I can give you some help and maybe show you a brief video segment that will help you understand the rules we need to keep in mind."*

This vision has moved one step closer through this cooperative project between SUNY, Instructional Systems Incorporated, and local schools. Moving us further toward achieving this vision recently, Computer Curriculum Corporation (CCC) and Zenith Electronics demonstrated the role that the emerging information highway can play by demonstrating low cost access to local area networks over standard cable TV home subscriber facilities (see Appendix D). The CCC software is fully compatible with Zenith's communication products and opens new doors for the delivery of education into the home. Children will now have the ability to use the full CCC multimedia software at home, in the classroom, in the library, or in any of the sites listed earlier. This breakthrough in multimedia educational delivery to the home announced in February 1994 is a clear indication that the cooperative venture between SUNY and Instructional Systems is moving in a direction indicated by learner needs and supported by sound educational practice and the technological capacity being developed today.

It is interesting to note that concurrent with SUNY's activities, Kodak Corporation was experimenting with similar CAI capacity in a plant in Rochester, New York. In September of 1992, Kodak staff made a presentation to the staff at the State University of New York describing their effort to apply computer assisted instruction in the workplace to address learning deficiencies of their employees. The specific Kodak objectives were to close the basic skill competency gaps that were contributing to decreased quality of products and services and to generally enhance the foundation skills of all employees. Their voluntary program demonstrated overwhelming success in both learner performance and cost effectiveness.

Their data illustrated that in their pilot with 100 employees, the cost for implementing the computer-based instruction was $4,000. Similar costs for the implementation of a traditional model was $23,000. In terms of educational achievement, for every 100 hours of instruction, the traditional approach achieved one grade equivalent gain. Similarly, for every 100 hours of instruction on the computer assisted instruction system, there were gains of 8 - 12 grade equivalents. In the fall of 1992, Kodak reported to SUNY that they too were exploring on a pilot basis the installation of learning capacity in homes for their employees.

This, and other evidence being generated by those implementing the new technologies across the country, make it clear that we are on the verge of a capacity that can cause a true paradigm shift rather than a simple extension of the current pedagogical paradigm.

SUNY, in conjunction with a wide array of corporate and educational partners, through this project, now seeks to build on its experience and commitment since 1991 and move this model to one that achieves the vision cited above .

Meeting the Purposes of the Stars Schools Program

The two purposes of the Star Schools Program are to encourage improved instruction in a number of content areas, particularly in mathematics and science; and to reach underserved populations. This project will meet both purposes of the Star Schools Program in the context of the new paradigm described earlier. Specifically, the project will "encourage improved instruction in mathematics" by creating and implementing a new paradigm of instruction that unites good learning theory with technology to realize the oft sought magical moment of "ready to learn" for both learners and the teachers almost simultaneously. Such a moment happens when there is the combination of a learner with a recognized dilemma seeking help and the presence of a knowledgeable teacher aware of and willing to act in consideration of the learner's characteristics. Within the conventional paradigm of instruction, whether in the classroom or the traditional distance education model, such moments are rare and usually serendipitous since learners are not generally in charge of their own learning and teachers are working with large groups, not individual learners. However, this project will bring together the learner, teacher, and technology to regularly create these "teachable moments."

The key aspects of this project are the real capacity to: individualize programs; automate appropriate changes in the program for the learners responses; allow the learner to control the pace of the instruction; use the technology to automate extensive on-going and summary record-keeping; and, most importantly, to remain focused on measurable results. With this project the technology will be a tool that enhances both learner and teacher performance and productivity. For the learner, the technology uses the power of the computer to completely individualize learner programs. Individualized instruction is achieved as the computer monitors each learner's progress and :

- Diagnoses the learner's level of understanding of a concept;
- Selects or generates exercises appropriate for each learner;
- Analyzes responses;
- Gives appropriate confirmation, correction, error messages, or hints;
- Displays the learner's results at the end of a session;
- Records the learner's performance.

This project will permit the teacher to accurately and specifically identify learner difficulties, and with the envisioned technology have the ability to one-on-one address the problem, precisely in the context of the "teachable moment" irrespective of physical location or time.

Record-keeping for teachers is essential, but all to frequently it is extensive and time consuming. Time devoted to recording and tracking course data per learner and groups of learners can be more effectively, efficiently and rapidly collected, analyzed, summarized and reported through the technology. The technology used in this project permits progress to be continuously monitored with a management system for use by the teacher, administrator, and learner. The technology provides detailed reports that enable teachers to assist their learners by:

- Tracking individual learner performance over short-and long-term periods;
- Identifying each learner's strengths and weaknesses and planning appropriate instruction or intervention;
- Reporting and comparing long-term learner progress within learner groups or between classes;
- Providing more time to actually work with individual students on specific problems when and as they are encountered.

The second overall purpose of the Star Schools Program is that underserved populations are served by this project. This purpose will be addressed through the selection criteria determining which urban school sites will participate. The criteria will explicitly require that underserved populations be included. In addition, The Star Schools Program and the absolute priorities, support Goal 2000, the President's strategy for moving the Nation toward the National Educational Goals.

Absolute Priority 1 requires that projects develop and deliver instructional programming for elementary or secondary school students, or both, that supports achievement of one or more of the National Educational Goals, and that is consistent with challenging National or State content standards. National Educational Goal 3 calls for student mastery of challenging subject matter in the specific content areas including mathematics and Goal 4 calls for U.S. students to be first in the world in mathematics and science. This project will assist the Star Schools Program in moving some schools toward meeting the third and fourth National Educational Goals in mathematics. Regarding National Standards, the computer assisted instructional software content for mathematics for this project (Computer Curriculum Corporation and Instructional Systems Inc.) are supportive of the Curriculum and Evaluation Standards for School Mathematics as prepared by the National Council of Teachers of Mathematics (NCTM).

Absolute Priority 2 refers to the preparation for work by students. Projects will develop and deliver instructional programming to enhance the workplace and literacy skills of high school students, or young adults who are not in school, or both, in order to prepare students for responsible citizenship, further learning, and productive employment, and make the school-to-work transition more successful. Central to the vision for this project is the creation of learning managers and educators (as described in the beginning of this document) who would respond to a range of community learners in different circumstances relevant to their individual developmental level rather than chronological criteria. Although this project is initially focused on Mathematics and K-12 to demonstrate its capacity, its eventual applicability and expandability to other subjects, populations, and contexts will be limited only by creativity, interest, or determination of those who pursue this model.

An additional benefit of this project is the exposure of underserved students to the technology. Many of these students would likely not have such exposure and since the technology is integrated into so many workplace environments, this exposure contributes to an element of job readiness not otherwise addressed.

Absolute Priority 3 is directed at preservice and inservice teacher education. In meeting this priority, projects must provide information about the National Education Goals, emerging national or state content standards, and ways in which standards-driven system reform can help ensure that all students have opportunities to reach high levels of achievement.

SUNY-Potsdam will develop and pilot test a series of teacher training programs designed to prepare teachers to effectively use new learning and communications technologies for teaching mathematics in accord with the Professional Standards of the National Council of Teachers of Mathematics. This is one way that national standards of quality education will be rigorously pursued. Additionally, the National Council of Teachers of Mathematics Curriculum and Assessment Standards will be included, as a content area, in the preservice curriculum and the recommendations for the inservice teacher training curriculum.

Furthering the Purposes of the Star Schools Program

The three objectives of this project address increasing learner access, improving the quality of teaching and learning, and enhancing the productivity of the institution, the faculty, and the learners themselves. The relationship of the first two objectives to the purposes of the Star Schools Program is evident. The objectives are:

[1] In selected urban school districts in the United States, develop a multimedia supplementary mathematics course that will be available via the emerging telecommunications infrastructure to students in their homes at the least possible cost; and [2] Develop and pilot a series of teacher training programs designed to prepare teachers to effectively use the new learning and communications technologies.

For the Star Schools Program to be successful in the long term, that is to have a systemic impact, the administration and structure of the educational system must also be addressed. The third objective of this project is concerned with the **context of and support for** this new paradigm, melding sound learning theory and a developing technology delivery system. The third objective is to:

Link participating schools, administrators and teachers with the emerging telecommunications infrastructure to enable multi-site pursuance of learning activities targeted to support school restructuring and reform.

The assumption underlying this objective is that the learning process involving the learner and educator does not occur in a vacuum. The learning process cannot be separated from context, including the structure and culture of the educational enterprise and community. It is clear that for the vision described earlier, that of community learning managers, both at the educator and administrator levels, to become reality, the educational enterprise must be open to reexamine and re-engineer itself to support this truly learner-centered and directed paradigm. The system learning requirements which require contextual and structural examination by administrator and educators are:

- system design provides for the teacher as architect and manager of learning experiences;
- extension of the traditional learning day and the traditional learning year;
- capacity to extend the full sophistication of the learning system beyond the traditional school site and into the community;
- presentation of learning experiences through varied strategies to include problem solving and exploratory learning.

For the emerging learning technologies to be effectively used by educational enterprises, it is critical that those impacted examine their "taken for granted" beliefs about instruction, learning and the contexts where they might effectively take place. The third objective of this project begins that examination.

In principle, the educational enterprise has always indicated that the education of the learner was its purpose and mission. Experience and research has shown that institutions of all sorts, including educational, develop structures to perpetuate themselves first, and to meet their missions second. This project enables the educational institution to put the learner truly in the center of the target and to be the pivotal reason for educational systemic reform.

IV. The Operational Plan

The objectives and actions steps outlined below are designed to engineer and demonstrate a technologically enhanced learning model whose chief focal point and beneficiary is the learner. When successfully completed, the resultant model will have the capacity to make significant contributions to the evolution of teaching as a profession and the reform of public education. This is a deliberate departure from projects that focus on scope of impact or the breadth of offerings. The public education model of 200 years and its fiscal support are deserving of the advantages that can be achieved by a focused effort to integrate a variety of technologies that build upon the emerging National Information Infrastructure.

Project Objectives

1. In selected urban school districts in the United States, develop a multimedia supplementary mathematics course that will be available via the emerging telecommunications infrastructure to students in their homes at the least possible cost.

Development and delivery of this course will serve as a model for how learning opportunities can be enhanced by the new learning technologies and demonstrate how telecommunications can extend an individualized learning day and school year to provide the continuity of learning experience that learning theory indicates is most effective. This effort will be coordinated with and may draw upon current projects as the "Global School House" and

"See You, See Me" so as not to be redundant with those in this aspect of the project. *The technical development aspect of this objective is to integrate the inhome delivery of multimedia CAI and the onscreen, window "insertion" of the live teacher in a videoconferencing mode, deliverable to one or many students simultaneously.*

2. Develop and pilot a series of teacher training programs designed to prepare teachers to effectively use the new learning and communications technologies. This series will be designed to prepare teachers to address the enhanced achievement of student competencies by (1) using non-traditional models, (2) delivering learning opportunities to non-traditional sites, and (3) demonstrating attributes of quality and productivity that surpass the traditional instructional model. The series will also focus on the development of a critically reflective practice as the role of the teacher shifts from disseminator of information to facilitator of knowledge creation.

3. Link participating schools, administrators and teachers with the emerging telecommunications infrastructure to enable multi-site pursuance of learning activities targeted to support school restructuring and reform.

The same technology used to deliver the multimedia, supplemental mathematics course will be used to link project management, participating schools, administrators and teachers. Thus, the project will use the integration of the technology development component as a method for data collection to distinguish organizational and systemic factors impeding or enhancing the success of this project. This data will be captured, analyzed and applied as project management, USAA, school and district personnel participate in a formative evaluation process.

Objectives and Action Steps

1. In up to ten urban school districts in the United States, develop a multimedia supplementary mathematics course that will be available via the emerging telecommunications infrastructure to students in their homes at the least possible cost.

1.1 Identify up to ten urban school districts within USAA that have the interest, in-kind TV support systems, cable contracts, and clientele that would benefit from extended day activities.

1.2 Develop school contracts that include in-kind support and student performance expectations.

1.3. Invite superintendents and technical representatives from the selected school districts to an orientation to provide an overview of the concept; identify the pupils to be served; review of the resources needed at the district level to support the project; and demonstration of the hardware and software resources to be provided by the project.

1.4 Develop a time frame for implementing the program in each school district.

1.5 Identify instructional and administrative personnel in each school district that will be responsible for implementing the system.

1.6 Training at least 3 teachers and 1 central office person in each school division in the technical aspects of the project.

1.7 Help coordinate technical aspects of the program in participating school districts; districts will submit program schedules to the USAA Office.

1.8 Site visits to determine if school districts are reaching the intended clientele and achieving the intended performance outcomes.

1.9 Complete evaluation and audit of first 6 months of operation, and develop an operational plan for 1995-96.

2. Develop and pilot a series of teacher training programs designed to prepare teachers to effectively use the new learning and communications technologies.

2.1 Assess existing resources and curricula (e.g. SUNY Teacher Institute at Appendix C).

2.2 Assess skill and knowledge of participating teachers in the selected districts.

2.3 Establish an advisory committee, which will include participant teachers, other faculty, participating district personnel.

2.4 Draft the contents and processes for the inservice training programs.

2.5 Select training faculty.

2.6 Arrange for participant teachers and staff to attend inservice teacher training.

2.7 Conduct inservice teacher training.

2.8 Evaluate inservice teacher training curriculum.

2.9 Revise inservice teacher training curriculum.

2.10 Conduct second inservice teacher training program.

2.11 Draft recommendations on content and process for a preservice curriculum.

3. Link participating schools, administrators and teachers with the emerging telecommunications infrastructure to enable multi-site pursuance of learning activities targeted to support school restructuring and reform.

3.1 Establish communication linkage with all participating schools, teachers, central office personnel, technical support, USAA, project management team, SUNY-Potsdam and William and Mary assessment group.

3.2 Identify or purchase necessary communications and computer equipment and supplies for all stake holders in all locations.

3.3 Establish information links based on relationships and needs (e.g. lists of teachers, technical support people, Superintendents, project management teams, assessment, etc.)

3.4 Identify and purchase software and communication programs for communication system.

3.5 Ensure all are able to use communications program.

3.6 Ensure local support to users of the communication system.

3.7 Maintain the communication system.

3.8 Monitor use of communication system to encourage usage.

3.9 Use communication system for evaluation, reporting, conferencing and communication of project management, timetables and accomplishments..

The overall project timeline reflecting the above action steps and those related to management is attached as Appendix E.

Intended Outcomes of Achieving the Project Objectives

Public school systems and the teaching profession exist to enable each child, uninhibited by social, cultural, economic and geographic barriers, to learn and achieve competencies to the ultimate of her/his capacity. The central intended outcome of this project is to shape the current and emerging technologies as integral to all levels of the education enterprise. The center of our target of intended outcomes is enhanced student achievement. To sustain technology's fundamental role in enhanced student achievement, the next "ring" in our target is creating a cadre of well trained professional educators able to sustain these applications and contribute to dynamic improvements over time. Given this new level of teacher professionalism, the "outer ring" in our target is to facilitate school restructuring and reform in accordance with the (1) new teacher competencies and roles and (2) the new technology-mediated instructional models that enable increased learner productivity.

V. Management Plan

This project is administered through the Research Foundation of the State University of New York (SUNY) on behalf of SUNY's Central Office (see Figure 6). Leadership for this project is provided by the management level partnership between the Central Office of Educational Technology (OET) of the State University of New York and the Urban Superintendents Association of America (USAA-located at the College of William and Mary, Williamsburg, Virginia). The project will be housed administratively at the OET and the Principle Investigator will be Gregory M. Benson, Jr. Mr. Benson is the SUNY OET Director of Program Development, oversees the previous inhome learning project described above, previously served as the Director of the New York State Center for Learning Technologies housed within the New York State Education Department, has held executive level corporate positions and has extensive national and international experience developing and implementing learning technology systems. Other key members of the management team include:

-Donald S. Bruno, Executive Director of the Urban Superintendents Association of America will lead the network management and assessment component of the project. Mr. Bruno was previously Executive Director of the Virginia Urban Schools Association and Superintendent of Schools in Newport News and Yorktown, VIrginia.

-Bartus H. Batson, President of Communications and Data Systems Associates will be the Leader of the Technology Development Team and work with those corporations representing the transport services, enabling technologies and applications programming to see that the requirements and specifications of the testbed site network are viable, reliable and cost-effective. Dr. Batson has extensive experience designing and implementing integrated voice, data and video networks. Dr.Batson had extensive experience working with the NASA communications systems and played a major role in the design of many state and national education systems.

Figure 6
Project Management Organization

SUNY Research Foundation

SUNY Central

Office of Educational Technology
Gregory M. Benson, Jr., Principal Investigator
Valerie Chakedis, Project Associate

USAA
Don Bruno, Exec. Director

CADSA
Bart Batson, President

POTSDAM
Peter Brouwer, Prof.

William & Mary
Assessment

Local School
Network

Technology Development Team
Enabling Technology
Transport Services
Applications Software

-James H. Stronge, Associate Professor of Educational Administration at the College of William and Mary will provide the leadership for the assessment component of the project. Dr. Stronge has undertaken considerable work in the area of educational evaluation and assessment and will work under the direction of Donald Bruno.

-Peter Scot Brouwer, Associate Professor of Computer and Information Sciences at the SUNY College of Potsdam, will lead the teacher training effort. Dr. Brouwer, has written and had professional experience with the application of computer technology to the classroom. Dr. Brouwer will draw heavily on the School of Education which has ongoing training programs developed to enhance use of computer and telecommunications for K-12 educational purposes. Appendix F contains the resumes of project staff.

The functional roles of the project partners under the leadership of those key staff noted above are indicated below:

USAA will oversee the network of participating schools, develop the school selection and monitoring process and take the lead on assessing the degree of institutional restructuring and reform achieved by the sites. As evidence of the promise of this project, desire of school leaders to be involved and the relationship of USAA with school districts around the country, attached as Appendix G are letters from thirteen urban school district superintendents in seven states indicating their willingness to participate, the cable capacity available to them, their Chapter I population and their willingness to provide inkind support. In regard to the reform assessment, USAA will be crucial to the dissemination of these project results to other member urban schools in the country.

A Technology Development Team will be created consisting of:

Communications and Data Systems Associates (CADSA) : An international telecommunications consulting firm with experience in the design and implementation of public and private distance learning systems. CADSA will serve the role of Technical Development Team Leader and play a key role in seeing that the team members (applications software, interactive TV technology and communications infrastructure) are well coordinated and pursue the integrated applications of value for inhome education and training purposes.

Instructional Systems Inc.: Developer of dial access CAI and distributor of CCC multimedia integrated learning systems. Will provide the leadership for the multimedia software development and installation.

General Instruments: Developer of interactive, inhome, cable TV devices and services. Will provide the leadership for the developmental effort related to the inhome interactive devices. Others involved in this effort include Zenith Electronics and IT Network.

Cable Industry Representation: The cable industry will be represented by the Cable Association of New York State which included in its membership several major U.S. providers of cable service including TCI, Time Warner, NewChannels, Cablevision and others. Many of these such as Cablevision, Time-Warner, Cablevision Industries and NewChannels are headquartered in New York and the current relationship is strong and will be enhanced through this project

A Teacher Training Program Development Team will be created to provide the leadership in the creation and pilot-testing of the teacher training modules and to assist with the coordination of the mathematics software development. SUNY-Potsdam will provide the lead in this area and draw upon its rich experience in technology teacher training and in mathematics curriculum development (through NSF projects). They will also collaborate with other curricula projects concerned with the changing role of educators and the need to develop a reflective practice for K-12 teachers.

Key Management Action Steps

This project includes a management plan and modest staff to oversee, coordinate and ensure the implementation of each of the major components: technology development, network creation, teacher preparation and assessment. As noted earlier, Gregory M. Benson, Jr. will be the principal investigator. In addition there will be a project associate and an administrative/logistical support person. The objective for the management group will be to: **Provide direction and guidance, as well as facilitate the flow of information to and among the grant components (technology, network, teacher preparation institution SUNY-Potsdam, and assessment), in order to ensure the implementation of the three grant objectives.** The action steps for the management staff are:

4.1 Hold planning meeting with USAA, SUNY-Potsdam, technical team and assessment.

4.2 Components complete and align milestones and time lines with each other.

4.3 Project management team create master project milestone and time line tracking system.

4.4 Management establish communication network capacity.

4.5 Management determine avenues of communication, such as e-mail, voice, etc. communications system.

4.6 Management obtain resources needed for communication system between management team, components and selected sites.

4.7 Management implement communication system, starting with e mail.

4.8 Management set up meeting schedule.

4.9 Management set up a monthly audio conferences.

4.10 Management set up a six month schedule for in person meetings.

4.11 Management establish and distribute reporting requirements (who, schedule and how), including quarterly reports, a one year interim report, and a final report.

4.12 Management team, with USAA visit all selected districts, schools and teachers.

4.13 Management team, SUNY-Potsdam, assessment and USAA representatives attend two day orientation for district superintendent and technical person [see 1.3]

4.14 Management team visit all selected districts, schools and teachers at one year point.

VI. Assessment

The purpose of the external evaluation for the project is to provide both a formative and a summative evaluation based on the prescribed purposes of the project. The formative evaluation component will be designed to provide ongoing feedback for program monitoring and improvement purposes. The summative evaluation component will be designed to determine the success of the project in attaining the established goals and objectives of the project as outlined in the project narrative.

The formative evaluation component will focus on review, revision, and improvement of the project as it is developed and throughout its implementation. Specifically, the formative evaluation will offer suggestions for improvement as the project unfolds. Evaluative feedback will be provided through written reports and through periodic meetings with key project personnel. The formative evaluation component will be conducted concurrently with project implementation and will include documentation provided by the project staff as well as on-site visits to project sites by the external evaluation team.

The summative evaluation component will be designed to assess the success of the project in fulfilling its stated purpose: to creatively use the new and emerging learning technologies to enhance the access, quality and productivity of learning opportunities available to urban students. Additionally, this goals-based evaluation will focus on success in accomplishment of the project's major objectives.

The summative evaluation will be designed to assess the degree to which the project accomplishes its stated objectives and its desired outcomes. Data will be collected through multiple data sources, including on-site observation, interview, analysis or artifacts of performance, documentation of accomplishments, and direct assessment of project participants.

Key Action Steps

5.1 Preliminary discussions regarding assessment

5.2 Develop assessment model

5.3 Develop assessment design

5.4 Collect Data

5.5 Analyze Data

5.6 Develop assessment report.

The full description of the Assessment Plan is attached as Appendix H.

VII. Dissemination of Project Success

In order for the success of this project to broadly influence a "shift" in the learning model beyond the test sites, it will be necessary to disseminate progress and results through a variety media. Methods will include public networks such as the Internet and national cable television, inclusion of reports in key education databases such as ERIC, special reports and conference presentations/workshops given by SUNY-OET, USAA, SUNY-Potsdam and the Technical Development Team members to their respective peer and affinity groups at regional and national levels. The project will pursue development of short video presentations geared to reflect the varying interests of these groups so that the content disseminated is audience specific. A central effort will include airing programs via cable television networks in the participating urban settings aimed at (1) informing the public of the promise of the new and emerging learning technologies demonstrated by the project and (2) urging and outlining action steps at the community level to build partnerships that result in implementation of effective programs that enhance the current learning model and contribute to school restructuring.

#

APPENDICIES

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APPENDIX A

LETTERS OF SUPPORT FROM KEY PARTICIPANT ORGANIZATIONS

FEB 7 1994

USAA

Urban Superintendents Association of America

School of Education • The College of William and Mary • Williamsburg, Virginia 23187 • (804) 221-2330 • /fax/ 804-221-2988

Executive Director
Donald S. Bruno

January 28, 1994

Mr. Gregory M. Benson, Jr.
Director of Program Development
Office of Educational Technology
State University of New York
State University Plaza
Albany, NY 12246

Dear Greg:

This letter is written to support the concept paper entitled "A Proposal to Combine Computer Assisted Instruction and Cable Television to Provide Inhome Supplementary Mathematics Learning Opportunities for Urban Children." As you know, the Urban Superintendents Association of America includes some seventy urban districts from the East Coast to the Heartland and the West Coast. The districts represented in this group have some of the largest numbers of disadvantaged and at-risk pupils in the nation as well as some of the strongest educational leaders in the profession. What a perfect opportunity this proposal presents to combine the expertise of the public school community, universities, and the private sector to get on the cutting edge of the information highway we will see by the year 2000.

We are most interested in becoming involved with this project from the developmental to the operational levels of the activity. This would include assistance with curriculum development, research, management, and identification of school partners. At this point, Educational Management Services, a Virginia corporation provides management, training, and curriculum services to the USAA and Virginia Urban Schools Association, and could be a key service provider to the project.

In addition to the above assets, we have a superior School of Education at The College of William and Mary that can be relied upon to provide support for the project. This includes a key faculty member who is nationally known for his work with homeless children in shelters.

I am sure that you sense our enthusiasm for this project and our willingness to become stakeholders with SUNY in this venture.

Sincerely,

Donald S. Bruno
Executive Director, USAA and
President, Educational Management Services, Inc.

Communications and Data Systems Associates
1835 Algoa Friendswood Road
Alvin, TX 77511

CADSA

Tel: 409-925-4702 • Fax: 409-925-4601

March 4, 1994

Mr. Gregory Benson, Jr.
Director
Program Development
Office of Educational Technology
SUNY Plaza, T-8
Albany, NY 12246

Dear Greg,

I am writing in support of your efforts to secure Federal funding to further develop the in-home learning model you have been working on over the past several months. I am in agreement that the technologies have undergone some dynamic changes recently, and that the achievement of your "integrated vision" is now closer than ever.

I welcome the opportunity to take the lead in coordinating your "Technology Development Team" and through your efforts to interface its work to address technical requirements driven by the needs of the target learners.

The SUNY System's strong national affiliation with local, urban school districts makes this a very attractive project. The fact that the system development will be closely guided by learners/schools is, I believe, the real key to the eventual success of the project.

The model you have articulated will surely emerge in coming years and I look forward to working with you to ensure its early and successful implementation.

Sincerely,

Bart

Dr. Bartus H. Batson
President

MAR 1 1 1994

INSTRUCTIONAL SYSTEMS INC.

CONTINENTAL PLAZA III
433 HACKENSACK AVENUE
HACKENSACK, NEW JERSEY 07601
201-343-1800 FAX: 201-487-1481

March 8, 1994

Mr. Gregory Benson, Jr.,
Director
Program Development
Office of Educational Technology
SUNY Plaza, T-8
Albany, NY 12246

Dear Greg,

We strongly support your efforts to secure Federal funding to further develop the in-home learning model that we have been working on with SUNY over the last several months. We have recently seen a tremendous evolution in the technology that is quickly moving us closer to the vision that you articulated nearly two years ago.

We welcome the opportunity to work with the others in the project on the "Technology Development Team" and look forward to further developing this model with you for application in urban school districts.

Sincerely,

Phyllis Kaminer

Phyllis Kaminer,
President

PK0208/pc

MAR 10 1994

128 STATE STREET, THIRD FLOOR • ALBANY, NY 12207 • 518/463-8676 • FAX: 518/463-0674

Richard F. Alteri
President

March 29, 1994

Dr. Gregory Benson, Director
Program Development
SUNY Central Office of Educational Technology
SUNY Plaza, T-8
Albany, New York 23346

Dear Dr. Benson:

I write in support of your efforts to secure funding for the SUNY project to combine multimedia computer assisted instruction and videoconferencing to deliver quality learning opportunities via cable to the home. Your recent presentation to us made it clear that this model of educational program delivery will significantly enhance access for those learners most in need of supplementary instruction. In addition, we agree that there are a variety of other education and training applications that will be enhanced through delivery to the home, workplace and community learning centers. Those opportunities are also of interest to the Association members.

I understand that as part of your project you will convene a "Technical Development Team" to meet periodically to advise the project on prototype design issues. We are pleased that our Association will be included as a key member of that team and we share your desire to expand access to education through inhome delivery. It is my understanding that any travel or per diem expenses for Association staff or members to attend your team meetings will be covered by your funded project.

We look forward to working with SUNY on this important project to extend access to education and training into homes via cable.

Sincerely,

Richard F. Alteri
President

RFA/dmp

BEST COPY AVAILABLE

ZENITH

ZENITH ELECTRONICS CORPORATION ☐ 1000 MILWAUKEE AVENUE ☐ GLENVIEW, ILLINOIS 60025-2493 ☐ (708) 391-8000
COMMUNICATION PRODUCTS FAX (708) 391-8919

March 17, 1994

Dr. Gregory M. Benson, Director
Program Development
State University of New York
Central Office of Educational Technology
SUNY Plaza, T-8
Albany, NY 12246

Dear Dr. Benson:

I am writing to express our interest in participating in the developmental project for which you are seeking funds to develop an in-home instructional model that combines the use of computer assisted instruction, (CAI), and the delivery of a live teacher via the community cable system. As you know, we are working with CCC software in similar type applications.

My understanding is that if the proposal is funded, you will be putting together a team of "technical development partners" representing the components of educational software applications, interactive TV technology, (Zenith), and national cable network infrastructure. This team will work with key national educational organizations that you have attracted to work with this project and create a network of national test sites to demonstrate the instructional power of combining CAI and a live TV teacher for in-home instruction. Your focus of effort on those K-12 students in the urban areas where access to enhanced educational opportunities is so important is consistent with our own desire to address developmental efforts to the urban areas.

If you obtain the outside funding, Zenith will seriously consider participation as a member of this important educational project development team and we look forward to working with you.

Sincerely,

Ron Rasmussen

Ron Rasmussen
Vice President Sales

CC: Rob Holsman

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THE IT NETWORK™

February 2, 1994

Mr. Gregory M. Benson, Jr.
Director, Program Development
Office of Educational Technology
SUNY Central Office, SUNY Plaza, T-8
Albany, NY 12246

Dear Greg:

We are pleased you have asked that the IT Network be involved in the educational R & D project you are developing for federal funding support.

I understand that our role will be focused on the development of the in-home, interactive technology that will enable use of the multimedia instructional software being developed by Instructional Systems, Inc. (ISI). In carrying out our role, we will work closely with ISI and national cable companies to assist in setting up the testbed sites in selected U.S. communities.

I am aware that, given successful funding, the operational plan for this R & D project and the detailed tasks/budget related to us will need refinement based on negotiation with the federal government. Nonetheless, I am very excited about the prospect of developing the potential for in-home delivery of high quality, multi-media learning opportunities. Though I understand that our initial efforts will focus on mathematics, it is our belief that once we have the delivery system developed and perfected, it will be applicable to a wide range of education and training needs.

I look forward to working with you.

Sincerely,

W. Scott Bedford

W. Scott Bedford
Chief Operating Officer

SB/cc

086

FEB 8 1994

GI General Instrument

General Instrument Corporation
GI Communications Division
6262 Lusk Boulevard
San Diego, California 92121
Tel 619 455 1500

9 March 1994

Mr. Gregory M. Benson, Jr.
Director, Program Development
Office of Educational Technology
State University of New York
Suny Plaza
Albany, NY 12246

Dear Greg:

I am aware of your efforts to seek federal funding support for demonstrating your in-home, multimedia learning model. The combination of sophisticated computer assisted instruction with videoconferencing is a vision that we too seek to realize and feel that the implications for education and training are enormous. Your work to date delivering math instructions into student's homes in Syracuse and New York City using a combination of phone and cable networking has been a necessary first step.

We welcome the opportunity to serve on your "Technology Development Team:" to assist with moving your current model to one that integrates the technologies and their capacities to a level reflected in the "vision" indicated in your paper. The unique combination of project team members to include representation of multimedia, instructional software, enabling technologies and cable companies is necessary to achieve the vision. Perhaps more importantly, the national linkage with the educational community you have established, your historic work in this area, and the credibility of the SUNY System complete and second component of a powerful "producer/consumer" development model.

I wish you well in your efforts to secure Federal funding support and stand ready to work with you on that project. Beyond that, since we share a common vision for technology applications to education. I look forward to meeting with you in the near future to explore building relationships that would be of mutual value as we each proceed.

Sincerely,

Robert M. King
Director, Private Network
Business Development

RMK/dbp

MAR 15 1994

Rochester Tel Center
180 South Clinton Avenue
Rochester, New York 14646 0700

RochesterTel

April 4, 1994

Dr. Gregory Benson, Director
Program Development
SUNY Central Office of Educational Technology
SUNY Plaza, T-8
Albany, NY 23346

Dear Dr. Benson:

I write in support of your efforts to secure funding support for the SUNY project to combine multimedia computer assisted instruction and videoconferencing to deliver quality learning opportunities to the home. Your recent presentation to us made it clear that this model of educational program delivery will significantly enhance access for those learners most in need of supplementary instruction. In addition, we agree that there are a variety of other education and training applications that will be enhanced through delivery to the home, workplace and community learning centers.

I understand that as part of your project you will convene a "Technical Development Team" to meet periodically to advise the project on prototype design issues. We are pleased to be included as a key member of that team and we share your desire to expand access to education through in-home delivery.

We look forward to working with SUNY on this important project to extend access to education and training.

Sincerely,

Dan Lazarek

Dan Lazarek
Marketing Director -
Telephone Operations

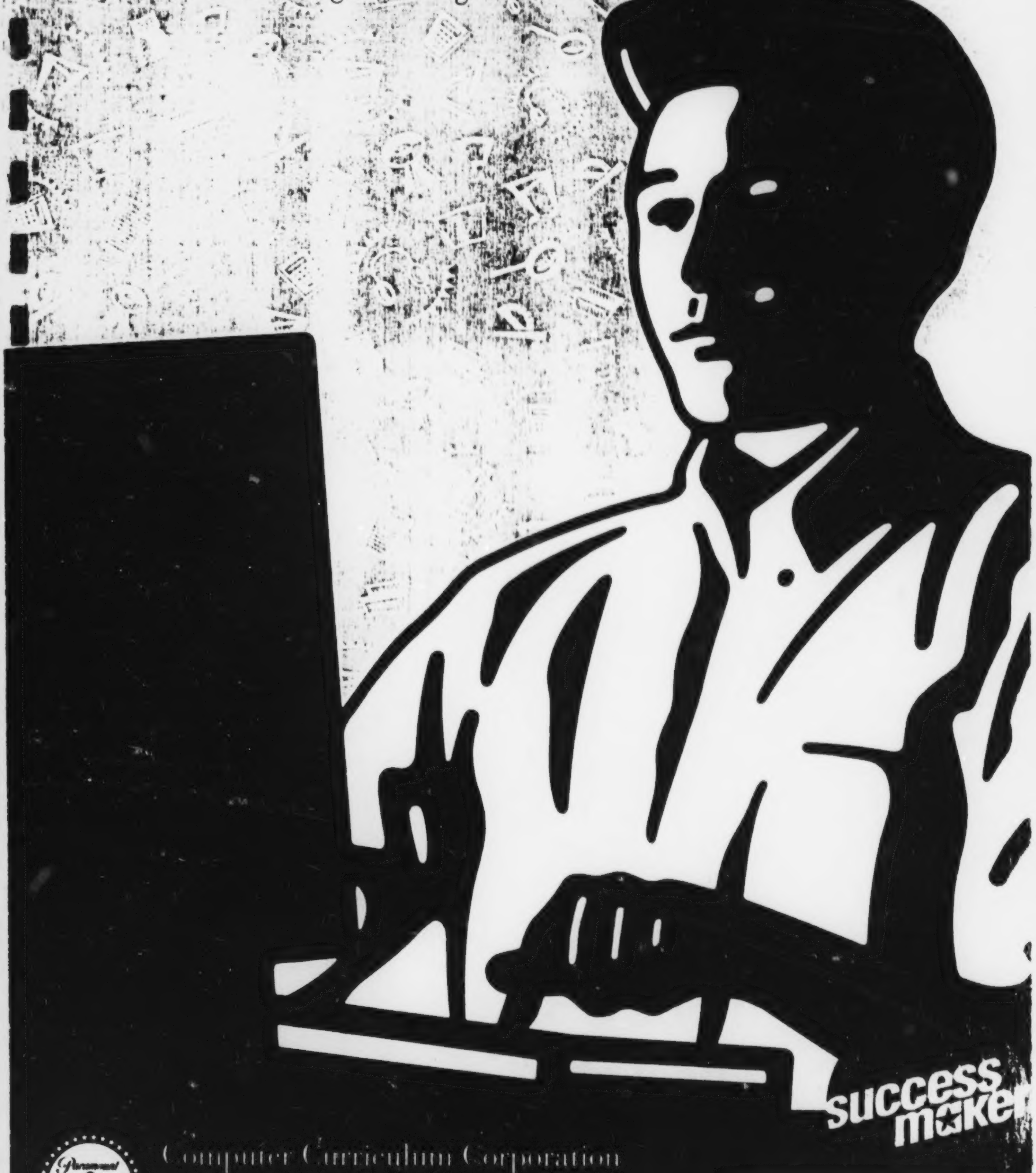
BEST COPY AVAILABLE

APPENDIX B

COMPUTER CURRICULUM CORPORATION'S "SUCCESS MAKER"

SuccessMaker

The Guaranteed Learning Advantage



Computer Curriculum Corporation

A Paramount Communications Company

BEST COPY AVAILABLE

Because SuccessMaker has proven its effectiveness for over **25** years, schools can use it with confidence.

Schools & School Districts

The beauty of SuccessMaker is that schools don't just get a learning system when they install it—they get a partner in education and one that is committed to learning success for all students.

Using the system's special reporting function, a school can generate detailed reports instantly on each student's progress and share those reports with parents at conferences and open houses. Even students themselves can use the reports to further involve their parents in their education.

Because SuccessMaker has proven its effectiveness—and provided accountability for over 25 years—schools can use it with confidence. It's just that simple.

Easy to Use—Anytime, Anywhere. SuccessMaker can be a tremendously powerful educational tool for teachers—if its potential is understood. And we've made that easy too.

There's extensive training for every teaching professional involved with SuccessMaker. Our full-time training staff—made up of former teachers, principals, and administrators—guides teachers in integrating SuccessMaker into their classrooms and their lesson plans. Plus, during the training sessions the teachers actually use SuccessMaker—so even if they haven't used a computer-based learning system before, they're perfectly comfortable with ours by the time they finish our program. And our staff works with the teachers on interpreting reports to learn when a student is having problems. The training process takes only a short time, but our staff is always available to help teachers get the most out of their SuccessMaker systems.

Because we believe that schools shouldn't have to modify their environments or routines to take advantage of SuccessMaker, we created the system to work in a variety of settings. Whether on a network in many classrooms, in a single lab, or on a single workstation, SuccessMaker can be used wherever and whenever it's needed. We believe it's this kind of flexibility that teachers and schools need to guarantee students' learning success. And that, after all, is what SuccessMaker is all about.

Computer Curriculum Corporation: The School District's Partner. When it comes to learning success, nothing succeeds like SuccessMaker.

And when it comes to commitment, no one delivers like Computer Curriculum Corporation. In our commitment to students, teachers, schools, and school districts. And to making SuccessMaker the best that it can be.

That's why we're continually updating and improving SuccessMaker's courseware, based on analysis of information compiled from a sampling of more than 30,000 students who are using SuccessMaker nationwide. And through our special Partnership Programs, we'll make it easier for schools to purchase the latest equipment and technology. Our Lease Partnership Program will even help them to afford a SuccessMaker system.

The Key to Learning Success. Success. For students. For teachers. For schools and school districts. That's what we guarantee with SuccessMaker. We know our customers will be satisfied. Because we've been helping teachers help students, schools, and school districts meet their educational goals for more than 25 years. We know how effective personalized learning can be—and so do all the satisfied customers we've served since 1967. That's why we're so confident about SuccessMaker. It's been proven over and over again—student by student, class by class, year by year. Quite simply, it works.

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All in all, the SuccessMaker
educational system is

Best

at keeping students
interested in learning.

As any teacher knows, the key to success in education is to keep the students interested. And SuccessMaker helps do that by combining truly personalized courseware with live video, animation, graphics, and digitized sound to create an individualized learning experience for each student.

Unlike other learning programs that use block learning, a rote system where every student moves through the same set of instructional sequences regardless of ability, SuccessMaker uses "distributive learning." This unique approach draws from a pool of thousands of activities to personalize each student's learning experience. SuccessMaker's *Reader's Workshop*, for instance, has more than 12,000 activities; the *Math Concepts and Skills* course has over 30,000.

At the Student's Own Pace. With every query and response, SuccessMaker assesses the student's ability and then customizes the instruction to keep that student interested and working up to his or her potential.

So when a student masters a particular concept, SuccessMaker realizes it and moves her or him on to the next activity. But suppose a student has trouble with an idea. SuccessMaker realizes that too, and generates additional activities for the student. If the problem continues, SuccessMaker generates a tutorial to help that student understand. SuccessMaker even "remembers" which concepts were most difficult for the student and periodically reviews them with the learner. With this feature, SuccessMaker students retain their knowledge. And because they're achieving their learning goals, they're also building their self-esteem.

It's just part of our personalized approach to learning, an approach that helps students get the most out of their education and themselves.

The Ideal Teacher's Aide. Teachers can always use a helper in the classroom, and in SuccessMaker they have the ideal teacher's aide. Powerful and flexible, SuccessMaker has over 3,000 hours of instruction, so teachers can use it as much as they want. It can be a tool for helping a student learn about a particular subject, or it can be an integral part of a student's entire educational experience.

Teachers can access SuccessMaker's Management System any time and from any station running its courseware—even when students are working on the system. And when used with a teacher presentation station, it can be an exciting classroom presentation tool.

Most importantly, though, because no two students—or classes—are alike, teachers can modify the structure of SuccessMaker's lessons to best meet their students' and their own unique teaching style.

It's the teacher's choice with SuccessMaker.

Reports to Help Teachers Help Students. With SuccessMaker, teachers have information about individual students—and whole classes—at their fingertips. That's because SuccessMaker continuously collects student data and can print reports on how much and how fast a particular student or class is learning.

These reports clearly and decisively identify students who need a teacher's help or more time with SuccessMaker. And they let teachers know when the students are back on track.

What's more, because these reports let teachers know the strengths and weaknesses of entire classes, teachers can use them for lesson planning throughout the year. SuccessMaker even enables teachers to create a variety of customized reports to reflect selected information, such as test scores and demographic data.

Such incomparable flexibility ensures teachers that their students are on the most productive learning path possible.

Students & Teachers

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[illegible] Package

(Macintosh/Windows)

(A = adult appropriate)

[illegible]	*Level*
Math Concepts and Skills	K-8/A
Problem Solving	3-6
Math Enrichment Modules	7-9/A
Introduction to Logic	7-12/A
Algebra Topics	9-12/A
Science Discovery	6-8/A
Reading	
Reading Readiness	K-1
Initial Reading	1-2
Reader's Workshop	3-7/A
Reading Investigations	6/A
Practical Reading Skills	5-8/A
Critical Reading Skills	7-12/A
The Reading Network	Adult
Language Arts	
Spelling Skills	2-8/A
Keyboard Skills	4-12/A
Language Arts Strands	3-6
Writer's Express	3-6
Writing: Process & Skills	7-9/A
Fundamentals of English	7-12/A
Express Yourself (writing activity books)	K-12/A
[illegible]	
Essentials for Living & Working	9-12/A
GED Preparation	9-12/A
Success in the Workplace	7-12/A

SOLO™ Package

(Macintosh/Windows)

Consists of the Full Package plus the three-course ESL/Bilingual Package:

Math Concepts and Skills, Spanish	K-2
Discover English	K-3
English as a Second Language	6-12/A

Cours

SuccessMaker Courseware Pack

(Macintosh/Windows)

	Level
Option A: English Version	
Math Concepts and Skills	K-8/A
Discover English	K-3
Reading Readiness	K-1
Initial Reading	1-2
Express Yourself (writing activity books)	K-12/A
Option B: Bilingual Version	
Math Concepts and Skills	K-8/A
Math Concepts and Skills, Spanish	K-2
Discover English	K-3
Reading Readiness	K-1
Initial Reading	1-2
Express Yourself (writing activity books)	K-12/A

Math Concepts and Skills	K-8/A
Problem Solving	3-6
Science Discovery	6-8/A
Reading Readiness	K-1
Initial Reading	1-2
Reader's Workshop	3-7/A
Reading Investigations	6/A
Practical Reading Skills	5-8/A
Spelling Skills	2-8/A
Keyboard Skills	4-12/A
Language Arts Strands	3-6
Writer's Express	3-6
Express Yourself (writing activity books)	K-12/A

	Level
Math Concepts and Skills	K-8/A
Math Enrichment Modules	7-9/A
Introduction to Logic	7-12/A
Algebra Topics	9-12/A
Science Discovery	6-8/A
Reader's Workshop	3-7/A
Reading Investigations	6/A
Practical Reading Skills	5-8/A
Critical Reading Skills	7-12/A
The Reading Network	Adult
Spelling Skills	2-8/A
Keyboard Skills	4-12/A
Language Arts Strands	3-6
Writer's Express	3-6
Writing: Process & Skills	7-9/A
Fundamentals of English	7-12/A
Express Yourself (writing activity books)	K-12/A

Math Concepts and Skills	K-8/A
Math Enrichment Modules	7-9/A
Introduction to Logic	7-12/A
Algebra Topics	9-12/A
Science Discovery	6-8/A
Reader's Workshop	3-7/A
Reading Investigations	6/A
Practical Reading Skills	5-8/A
Critical Reading Skills	7-12/A
The Reading Network	Adult
Spelling Skills	2-8/A
Keyboard Skills	4-12/A
Writing: Process & Skills	7-9/A
Fundamentals of English	7-12/A
Essentials for Living & Working	9-12/A
GED Preparation	9-12/A
Success in the Workplace	7-12/A
Express Yourself (writing activity books)	K-12/A

ges and Supplemental Products

eware

Subject-Area Packages

Mathematics *(Macintosh/Windows)*	*Level*
Math Concepts and Skills	K-8/A
Problem Solving	3-6
Math Enrichment Modules	7-9/A
Introduction to Logic	7-12/A
Algebra Topics	9-12/A
Essentials for Living & Working	9-12/A

Reading/Language Arts *(Macintosh/Windows)*	
Reading Readiness	K-1
Initial Reading	1-2
Reader's Workshop	3-7/A
Reading Investigations	6/A
Practical Reading Skills	5-8/A
Critical Reading Skills	7-12/A
The Reading Network	Adult
Spelling Skills	2-8/A
Keyboard Skills	4-12/A
Language Arts Strands	3-6
Writer's Express	3-6
Writing: Process & Skills	7-9/A
Fundamentals of English	7-12/A
Essentials for Living & Working	9-12/A
Express Yourself (writing activity books)	K-12/A

Science *(Windows only)*	
Science Discovery	6-8/A
Experiences in Science	
Life Science Units	6-9/A
Earth Science Units	6-9/A
Physical Science Units	6-9/A
Biology Units	5-12/A
Writing, Reading, Thinking Lab	3-12/A

Writing Workshop *(Windows only)*	*Level*
Writer's Express	3-6
Writing: Process & Skills	7-9/A
Fundamentals of English	7-12/A
Keyboard Skills	4-12/A
Express Yourself (writing activity books)	K-12/A
Realtime Writer*	2-12/A
Experiences in Communication Arts	
Help Yourself Read	2-6
Steps to Reading	9-12/A
Reading Comprehension	4-8
Writing, Reading, Thinking Lab	3-12/A
Language Development	5-7
Writing Activities	3-6
Type Rider	2-12/A
Reading Bridge	2-8

Supplemental Products

ESL Bilingual Package *(Macintosh/Windows)*	*Level*
Two-Course Option:	
Math Concepts and Skills, Spanish	K-2
Discover English	K-3
Three-Course Option adds:	
English as a Second Language	6-12/A

Macintosh Products	
The New Grolier Electronic Encyclopedia	3-12/A
Bravo! Books	K-2

Windows/MS-DOS Products	
Multimedia Reference Library	3-12/A
Realtime Writer*	2-12/A
Experiences in Science (See list of courses in Science Package)	5-12/A
Experiences in Communication Arts (See list of courses in Writing Workshop Package)	2-12/A

Print and Video Resources	
Express Yourself (writing activity books)	K-12/A
Reading Investigations Library	6/A
Discover English Presentation Resources	K-3
Reading Investigations Presentation Resources	6/A
Science Discovery Presentation Resources	6-8/A

One set of Presentation Resources is included with each courseware package that includes the specific course.

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APPENDIX C

SUNY SUMMER INSTITUTE BROCHURE

Teaching And Learning On Television

The educational power of Public TV programs like *Sesame Street* and *Nova* is demonstrated every year as they continue to teach and inspire millions of children and adults. As television camcorders and other video technology become more available to classroom teachers at every level, educators can now create their own video-based instructional programs including *"distance learning"* projects. Although the TV equipment may be readily available, teachers also need the knowledge and skills to create pedagogically sound and visually exciting programs—as well as guidelines on how to use TV in the classroom with maximum effectiveness.

An Interdisciplinary Distance Learning Experience With Presenters From Three First-Rate Institutions

The *New York Network*, the television production and transmission arm of the *State University of New York*, in collaboration with the Communication Department and the School of Education at the *State University College* at *New Paltz* and the *New York State Theatre Institute* (NYSTI) have pooled their considerable experience and research to develop and present a series of short-form institutes for teachers who wish to originate or utilize video-based distance learning. *Instructional Systems, Inc.* (ISI) brings their Computer Assisted Instruction expertise to the institute.

Five Days of Intensive Training

The Institute, running five consecutive days, will present material on three tracks: Theoretical, Performance and Production. Topics will include the Methodology and Pedagogy of Distance Learning, Resources for TV Teachers, Copyright and Intellectual Property Issues, Labor/Management Issues, Performing for the Camera, Production of Video-based Instruction, Combining Computer Assisted Instruction and Live TV and Promoting the Implementation of Distance Learning.

Academic Credit is Available!

Two (2) hours of graduate or undergraduate credit can be earned by participants who register through the *SUNY College* at *New Paltz* and who successfully complete the classroom, workshop and written requirements of the Institute. *SUNY New Paltz* will provide instructional staff for the Theoretical track of the Institute, the *New York State Theatre Institute* will provide staff for the Performance track, the *New York Network* will provide instructional staff and facilities for the production sequence and *Instructional Systems, Inc.* will provide training in Computer Assisted Instruction.

SUNYSAT
New York Network
Alfred E. Smith Building
12th Floor
PO Box 7012
Albany, NY 12225-7012
(518)443-5333

AN INSTITUTE

Teaching and *Learning* on *Television*

in association with the
Great Lakes Collaborative Star Schools Program

August 2–6, 1993
Albany, New York

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Registration, Academic Credit, Lodging and Costs

Institute registration costs are waived for teachers certified as participants in the *Great Lakes Collaborative (GLC) Star Schools Program*. The Institute in Teaching and Learning on Television is also supported by *Instructional Systems, Inc.*, provider of Computer Assisted Instruction (CAI) components to the *GLC CAI/Live TV Teacher Project*. Registration is limited to 20 participants.

Participants who wish to earn college credit must register through *SUNY/New Paltz*. New York State resident tuition for credit will range from $212.00 for undergraduate to $338.00 for graduate. Non-resident tuition is $550.00 for undergraduate and $618.00 for graduate. Call Claire Jeseo at 518-443-5333 to request registration materials.

A block of rooms has been reserved at the *Albany Omni Hotel*, which is convenient to the Institute venue. Single rooms are available at $75.00, doubles are $85.00 and a limited breakfast menu is available at $5.00. Call for reservation at 518-462-6611 (Institute begins at 8:30am August 2nd and concludes 1:00pm August 6th). All meals will be "on your own" at restaurants in the vicinity of the hotel or *Empire State Plaza*.

- -

Detach Here

REGISTRATION FORM

Name (Please type or print)

Address

City State Zip

Phone Number Fax Number

Registering for credit?

☐ Undergraduate ☐ Graduate

Check your discipline(s):

☐ Math ☐ Science ☐ Humanities ☐ Arts

Registration Deadline: ***July 1, 1993***

Mail To:

Claire C. Jeseo, Registrar
New York Network
PO Box 7012
Albany, NY 12225-0012
(518) 443-5333/Fax (518) 426-4198

Presenters

Lynn C. Spangler has been teaching television criticism, media effects, writing and video production at the *State University* of *New York, College* at *New Paltz* for the last ten years. She received her Ph.D. in Mass Communications from *Wayne State University* in 1983 and Michigan provisional secondary teaching certificate in Speech/English in 1973.

Erika Johnson Newell is a graduate of *New York University's* educational theater program. In addition to theatrical, video and radio work, Ms. Newell taught Language Arts and Reading at the junior high level in Brooklyn. Currently a member of the resident acting company of the *New York State Theatre Institute*, Ms. Newell divides her time between performing and educational work.

David Bunce is a graduate of *Central Connecticut State University* and has taught acting at the *Rensselaer Polytechnic Institute*, *Russell Sage College* and the *New York State Theatre Institute* where he has been a Teacher/Artist for ten years. He has worked as either performer, writer or director in more than fifty educational and promotional videos.

Roy T. Saplin, Jr. is the Programming Coordinator for *SUNYSAT*. He has worked as manager of operations/production at a television station, manager for a production facility, and as a news and documentary producer/director/ photographer. Mr. Saplin holds degrees in Marketing and Business Management and is certified in Public Relations and Communications.

Presenters

Sue Gallagher is experienced in all aspects of television production in both the technical and creative arenas. She is currently producing live, interactive distance learning programs for *Empire State College's "SUNY by Satellite"* and the *New York State Education Department*. Sue is a graduate of the *State University of New York, College* at *Plattsburgh* with a degree in Mass Media.

Christopher Conto is TV Production Supervisor at *SUNY's New York Network*. Since joining the *Network* he has been involved in projects ranging from field production in Europe and the Middle East, to serving as project director for a number of distance learning initiatives. He is a graduate of the *State University* of *New York, College* at *Plattsburgh* with a degree in Mass Media.

Kathleen Ann Gilman is a Computer Assisted Instruction (CAI) specialist with Instructional Systems, Inc. (ISI). She holds an MBA from the Suffolk University School of Management in Boston and earned her undergraduate degree cum laude from Framingham State College in Massachusetts. Ms. Gilman brings long experience in computer hardware and software to the ISI Laptop Computer CAI Program and its integration with "live" TV tutorials for CAI students.

AN INSTITUTE

Teaching and *Learning* on *Television*

in association with the
Great Lakes Collaborative Star Schools Program

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APPENDIX D

CCC PRESS RELEASE REGARDING ZENITH CAPACITY

COMPUTER CURRICULUM CORPORATION

1287 Lawrence Station Road
Sunnyvale, CA 94089

NEWS

FOR IMMEDIATE RELEASE

Contact: Andrea Mace
(408) 541-3164
Michael Caputo
(202) 667-0901

Computer Curriculum Corporation Brings America's Schools Into the 21st Century at ComNet '94

***

SuccessMaker™ Educational Software Helps Students Gain Access to the Information Highway

WASHINGTON, D.C. -- Computer Curriculum Corporation and Zenith Electronics Corporation are teaming up at ComNet '94 to demonstrate the role of education on the information highway. Zenith's HomeWorks™, a PC LAN gateway, provides low-cost access to local area networks over standard cable TV home-subscriber facilities. Computer Curriculum's educational software, SuccessMaker™, is fully compatible with Zenith's communications products and will open up new doors for the delivery of education and educational technology. Children will have the ability to access SuccessMaker at home, in the classroom, and in the library, supporting the goal of "anytime, anyplace" learning.

Computer Curriculum's SuccessMaker includes over 3,000 hours of activities, featuring full-motion video, animation, computer graphics, and digitized sound. These features combine

more

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to produce an exciting, interactive learning environment that teachers can use to meet the individual needs of students. Specific subjects covered in the SuccessMaker software include mathematics, reading, language arts, writing, science, and life skills.

For more than 25 years, Computer Curriculum Corporation has been developing state-of-the-art multimedia educational software for America's schools. Computer Curriculum's newest version of the personalized learning system, SuccessMaker, demonstrates the company's commitment to furthering the nation's education goals and helping students gain access to the information highway.

The use of computers in education has shown the potential to motivate students, personalize instruction, combine disciplines, and enhance both teacher and student productivity. Schools that incorporate technology into the curriculum have reported higher learning rates, lower dropout rates, increased student self-confidence, and better problem-solving skills.

Today, state education systems are realizing the importance of technology in the classroom. In the November 17, 1993 issue of Education Week, Gordon Ambach, the executive director of the Council of Chief State School Officers, argues "There is no way we can achieve [the nation's education] goals for all our children without an increased use of telecommunications."

National, state, and local education leaders are heeding Ambach's word and bringing technology into the classroom. States such as Florida and Utah have plans to implement

# more #

statewide on-line educational systems, therefore linking their students into the information highway. Computer Curriculum is playing a major role in providing technology that helps states such as these pursue educational excellence and meet the nation's goals.

Headquartered in Sunnyvale, California, Computer Curriculum Corporation pioneered technology-based learning systems in 1967. Today its multimedia learning systems provide instruction to over one million students in thousands of schools across the country. Computer Curriculum is a division of Paramount Publishing, the world's largest publisher of educational materials. Paramount Publishing is the publishing operation of Paramount Communications, Inc., a global entertainment and publishing company.

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APPENDIX E

FULL PROJECT TIMELINE

Universal Access to Learner-Directed Education Through Telecommunications: Developing the Electronic Superhighway as an Avenue for Community Learning

PROJECT TIMELINE

NETWORK CREATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1.1 Identify urban school districts	▨	▨																						
1.2 Develop school contracts		▨	▨																					
1.3 Conduct orientation			▨	▨																				
1.4 Develop a time frame			▨	▨																				
1.5 Identify school/district personnel			▨	▨																				
1.6 Teacher training									▨	▨										▨	▨			
1.7 Submit program schedules			▨	▨	▨																			
1.8 Site visits				▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨
1.9 Audit of first 6 months							▨																	

TECHNICAL DEVELOPMENT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1A.1 Review extant math software design		▨																						
1A.2 Content/media design improvements		▨	▨	▨																				
1A.3 Define interactivity requirements				▨	▨	▨																		
1A.4 Test/refine current technology				▨	▨	▨	▨	▨																
1A.5 Install headend/income technology						▨	▨	▨																
1A.6 Conduct inhome course/live teacher																								

TEACHER TRAINING

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
2.1 Assess existing resources	▨	▨	▨																					
2.2 Assess participating teachers				▨	▨																			
2.3 Establish an advisory committee				▨	▨																			
2.4 Draft in-service programs					▨	▨																		
2.5 Select training faculty					▨	▨																		
2.6 Plan training sessions						▨	▨																	
2.7 Conduct first training session								▨	▨															
2.8 Evaluate in-service teacher training									▨	▨	▨													
2.9 Revise teacher training curriculum											▨	▨												
2.10 Conduct second session													▨	▨										
2.11 Draft recommendations for a pre-service curriculum																								

PROJECT TELECOMMUNICATIONS CREATION

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
3.1 Establish communication linkage																								
3.2 Obtain communications equipment																								
3.3 Establish information links																								
3.4 Obtain communications software																								
3.5 Orient participants																								
3.6 Ensure local support																								
3.7 Maintain the Communication system																								
3.8 Monitor use of communication system																								
3.9 Use communications for project functions																								

MANAGEMENT		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
4.1	Hold planning meeting	▨	▨																						
4.2	Align milestones and time lines	▨	▨																						
4.3	Master project milestone and time line tracking system		▨	▨																					
4.4	Establish communication network capacity	▨	▨	▨	▨	▨	▨	▨																	
4.5	Determine avenues of communication	▨	▨	▨																					
4.6	Obtain resources for communication system	▨	▨	▨																					
4.7	Implement communication system		▨	▨	▨																				
4.8	Establish meeting schedule	▨	▨																						
4.9	Establish monthly audio conferences	▨	▨																						
4.10	Set management team meetings	▨	▨																						
4.11	Establish reporting requirements				▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨
4.12	Site visitations						▨	▨	▨	▨								▨	▨	▨	▨	▨	▨		
4.13	Two day orientation				▨	▨																			
4.14	Mid-project site visitation												▨	▨											

ASSESSMENT		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
5.1	Preliminary discussions regarding assessment			▨	▨																				
5.2	Develop assessment model			▨	▨	▨																			
5.3	Develop assessment design			▨	▨	▨																			
5.4	Collect Data			▨	▨	▨	▨	▨	▨	▨	▨	▨	▨												
5.5	Analyze Data			▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨
5.6	Develop assessment report																				▨	▨	▨	▨	

APPENDIX F

PROJECT STAFF RESUMES

RESUME

Gregory M. Benson, Jr.

Box 340
Stephentown, N.Y. 12168
(518) 733-6263

Positions/Responsibilities

1990-Present	Director, Program Development, State University of New York, Central Office of Educational Technology Develop new applications of learning technologies to enhance access, quality and productivity of learning.
1981-1990	Director, New York State Center for Learning Technologies, New York State Education Department Provided leadership for K-12 applications of learning technologies and administered public television program.
	(1986) Adjunct Professor, College of St. Rose, Albany, New York, Graduate Education Course in Learning Technologies for candidates for the New York State school administration certificate.
1980-1981	Vice President for Planning and Administration, Bibliographic Retrieval Services (BRS) Developed strategic business plans and administered over 200 operations staff of Personnel, Customer Services, Applications, Programming, Documentation, Training and Sales divisions.
1977-1980	President, Education Services Group, Division of Bibliographic Retrieval Services Developed BRS online information products and services specific to postsecondary and K-12 markets.
1971-1977	Coordinator, Educational Programs and Studies Information Service, New York State Education Department Developed automated program management

information tools and administered statewide information service.

1965-1971 New York State Education Department positions of increasing responsibility in the Office of Finance and Office of Educational Research.

NOTE: This period was interrupted by active U.S. Army Infantry service (1966-68).

Consultative/Advisory Experience

International

Distance learning consultant to Moscow State University under UNESCO grant (Moscow, 1994) and the European Community (Berlin, 1993 and Brussels, 1993) to assist with planning the use of cable/phone capacity for delivering job training and retraining to homes and the workplace.

Information and management systems design consultant for UNESCO mission to Beirut, Lebanon (1980) and the Ministry of Telecommunications, Bermuda (1988).

National

Consultant and/or advisory board member to several commercial organizations and State Education Agencies, regional organizations, the U.S. Department of Education and the U.S. Congress Office of Technology Assessment related to the application of learning technologies and information management techniques.

Local

Consultant to several local school districts to assist with the assessment and installation of technologies to address improved student learning and staff development needs.

Management Creativity and Leadership

Currently developing (with corporate and Federal funding) learning systems that combine CAI and videoconferencing for inhome and workplace delivery of learning opportunities for K-12, postsecondary and adult populations.

Developed an "electronic lab school" as a model for revitalizing preservice and inservice education. Model currently being adopted by the Coalition of Essential Schools at Brown University.

Developed strategic and operational plans for programs, products and services as the initial office holder for all public and private positions shown above.

Conceptualized and developed the Federally-supported National School Practices Information Network (SPIN)and School Practices File (SPIF) marketed initially by BRS and subsequently acquired and distributed by Scott, Foresman and Company.

Securing External Support

In the public sector from 1981 to present, secured external public and private funding support averaging $1,000,000 per year.

Publications

Numerous publications and journal articles in the areas of information system design and management and the application of appropriate technologies for education and training purposes. Some examples include:

"An In-Home Math Coaching Project: Combining CAI and a Live TV Teacher", SUNY, 1993.

"Applying Telecommunications in the U.S. Lifelong Learning Enterprise", National Communications Forum, Chicago, Illinois, October,1989.

"Distance Learning: The Promise, The Challenge," Guest Editorial, Electronic Learning, September, 1988.

"Technology Enhanced Distance Education: The Promise of New Opportunities for Lifelong Learning", Journal of the International Council on Distance Education, May,1988.

"Rural Schools Tap Into High-Tech Learning", PTA Today April,1988.

"Long Distance Learning: New Windows for Lifelong Learning", Principal, November, 1987 and THE Journal, August, 1987.

"Electronic Highways: The New Roads Needed for Excellence in the Empire State", Empire State Report, February, 1985.

Awards

Winner (1987), Council of State Goverments' McCarthy Award for Outstanding Information Product, Program or Service for the "Learning in New York" video teleconference series.

Winner (1987) ,Bronze Award for Visual Communications Department of the Year, National Association of Visual Communicators.

Winner (1985), Education Press of America's Award in the Learned Article Category for the article "Enhancing Learning Opportunities Through the Challenge of Technology" which appeared in the National Association of Secondary School Principals Bulletin as a "Bulletin Special" in November, 1984.

Recipient (1967), U.S. Army Commendation Medal.

Key Presentations

"Expert Panel Member", European Community videoconferences on "Telematics Based Training", Brussels, Belgium,October, 1993.

Presenter,"International Model Schools Conference", Raleigh, North Carolina, June, 1993.

Presenter,"Global Trends in Education Conference", Augusta, Maine, October, 1992.

Moderator, U.S. Department of Education National Teleconference Series entitled "Policy Issues Related to Applying Telecommunications Technologies for Educational Purposes", (1989).

Keynote addresses that include the Lesley College Annual Computer Conference, Boston, Massachusetts, the Sixth National Conference on Communications Technology in Education and Training, Washington, D.C., and the Annual New York State Media Institute, Syracuse, New York.

Board Memberships

Turner Educational Services National Advisory Board

Distance Learning Advisory Board, New York State Regents College

American Academy of Achievement, Achievement Television Network

Communications and Data Systems Associates
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Fax: 409-925-4601

Dr. Bartus H. Batson
President

Bartus H. Batson was born in Morrilton, Arkansas, on June 1, 1942. He received the B.S. degree in electrical engineering from Arlington State College (now the University of Texas at Arlington) in 1963 and the M.S. and Ph.D. degrees in electrical engineering from the University of Houston in 1967 and 1972, respectively.

In 1963, he joined the NASA Manned Spacecraft Center (now the Lyndon B. Johnson Space Center) in Houston, Texas, and worked in Flight Operations and Analysis on Guidance, Navigation and Command Systems for the Gemini Program. From 1964 to 1968, he served in the U. S. Army as an electronics instructor in the Artillery and Missile School at Fort Sill, Oklahoma. In 1966, he returned to the Manned Spacecraft Center (now the Lyndon B. Johnson Space Center) and worked until 1983 on a wide variety of problems pertaining to statistical communication theory as applied to communications systems for manned spaceflight programs, including Apollo, Apollo-Soyuz, Skylab, and Space Shuttle. He personally developed the conceptual designs for the Space Shuttle S-band and Ku-band communications systems, which incorporated several state-of-the-art advances in the areas of modulation, coding, synchronization, and spread spectrum, at data rates of up to 50 Mbps. As Manager of the Systems Analysis Office of the Tracking and Communications Division, he was responsible for communications, tracking, instrumentation, and data systems engineering and analysis for the entire Space Shuttle Program.

In 1980, while still at NASA, Dr. Batson founded CADSA, Inc., which was originally a consulting company specializing in satellite communications and voice/data/video applications. In 1983, he resigned from NASA to devote full time to CADSA. During the period from 1983 to the present time, CADSA has become a diversified telecommunications company, providing a wide range of products and services.

Dr. Batson was heavily involved in the design and implementation of the USCI (United Satellite Communications, Inc.) video network, which was the first operational DBS (direct broadcast satellite) system. His contributions to USCI included extensive analysis efforts and preparation of the technical portions of several FCC filings, responses, etc., that eventually resulted in regulatory approval of the use of medium-power FSS (fixed satellite service) satellites for provision of DBS services to the home consumer market. He also participated in the design of the STARLOK video scrambling system that was developed by GI for USCI.

Another significant CADSA project directed by Dr. Batson was the total engineering effort associated with the design, development, implementation, testing, maintenance, and operations of all elements of TI-IN Network, a provider of satellite-based interactive (one-way video/data, two-way audio/data) educational programming. As part of this project, Dr. Batson directed the design, development, and manufacturing of several specialized microprocessor-based items of equipment which provided various features such as wireless keypad data response from remote classrooms; customized, automated audio talkback; and addressable hardcopy distribution. CADSA also manufactured several hundred STARLOK video descramblers for TI-IN use, after GI abandoned this product line.

One of the most significant projects which Dr. Batson is currently involved with is the design and implementation of a digital video compression system for NTU (National Technological University) to replace their existing satellite-based analog system. The new network will utilize IRDs (integrated receiver-decoders) provided by CLI (Compression Laboratories, Inc.), but these IRDs will be integrated into enclosures containing a 80286-based processor with several custom-designed expansion cards to provide various features such as PCM audio (multiplexed with an auxiliary data channel); IRD remote channel select; VCR remote control; independent video, audio, and data channel addressability; broadcast facsimile; and equipment health and status monitoring/reporting. Dr. Batson is responsible for the design, development, integration/ test, and initial manufacturing efforts associated with this project.

Dr. Batson has been an adjunct member of the faculties of Rice University and the University of Houston, where he taught graduate courses in space communications, digital communications, statistical communications theory, information theory, estimation theory, and coding theory. He has also developed and taught numerous short courses on topics such as speech processing, video processing, spread spectrum communications, data communications, digital communications, satellite communications, space communications and navigation, and systems engineering.

He is a senior member of the IEEE and is a past chairman of the Satellite and Space Communications Committee of the IEEE Communications Society. He served for several years as Editor for Satellite and Space Communications for the IEEE Transactions on Communications and was guest editor of a special issue of the Transactions dealing with Space Shuttle Communications and Tracking. He was Program Chairman of the National Telecommunications Conference (NTC '80) held in Houston in December 1980 and General Chairman of the National Telesystems Conference (NTC '82) held in Galveston, Texas, in 1982. He has also been active in the Instrument Society of America, having served as Director of the Telemetry Division. He is a member of Sigma Xi and Phi Kappa Phi and is a Registered Professional Engineer in the State of Texas.

Dr. Batson has published more than fifty papers in practically all areas of communications. A partial list of these publications is attached.

Bartus H. Batson
List of Publications

1. Signal Design Techniques for Space Communication Systems (Masters Thesis), University of Houston, Houston, Texas, August 1967.
2. "An Analysis of the Telecommunication Performance of a Data Relay Satellite System" (with G. D. Arndt and C.T. Dawson), *Proceedings of the Fifth Space Congress*, Cocoa Beach, Florida, March 1968.
3. "An Analysis of the Telecommunication Performance of a Lunar Relay Satellite System" (with G. D. Arndt and S. W. Novosad), *Proceedings of the 1972 International Conference on Communications*, June 1969.
4. "Transmission Characteristics of Split-Phase PCM Codes" (with N. Shehadeh and R. Van Cleave), *1969 SWIEECO Record*, April 1969.
5. "A Test Set for Integration of Data Compression/Error Correction Encoding Techniques" (with R. W. Moorehead and F. Perkins), *Proceedings of the National Electronics Conference*, 1970.
6. "Digital Communications--An IEEE Short Course" (with R. S. Simpson, F. L. Huban, and T. W. Parks), Houston, Texas, 1971.
7. "Low-Rate Communications Using Digital Coding and Modulation" (with R. W. Moorehead and C. K. Land), *Proceedings of the Shuttle Integrated Electronics Conference*, NASA Manned Spacecraft Center, Houston, Texas, 1971.
8. Intersymbol Interference and Error Probability for Bandlimited QPSK Transmission Systems, Ph.D. Dissertation, University of Houston, Houston, Texas, August 1972.
9. "A Variable-Data-Rate, Multimode Quadriphase Modem" (with R. W. Allen), *Proceedings of the 1972 International Conference on Communications*, 1972.
10. "A Digital Communications System for Manned Spaceflight Applications" (with R. W. Moorehead), *Proceedings of the 1973 International Conference on Communications*, 1973.
11. "A Command Encoding Scheme for a Multiplexed Space Communications Link" (with G. K. Huth), *Proceedings of the 1973 National Telecommunications Conference*, 1973.
12. "Space Shuttle Communications and Tracking System" (with J. H.I Johnson), *Proceedings of the 1974 International Telemetering Conference*, 1974.
13. "Space Shuttle Communications--Wideband Direct Link Signal and Systems Design" (with G. K. Huth), *Proceedings of the 1974 International Telemetering Conference*, 1974.
14. "Coding/Modulation Tradeoffs for Shuttle Wideband Data Links" (with G. K. Huth and B. D. Trumpis), *Proceedings of the 1974 National Telecommunications Conference*, 1974.
15. "A Digital Bit Synchronizer for Low SNR Manchester Data" (with A. Cellier, W. C. Lindsey, and H. A. Vang), *Proceedings of the 1974 National Telecommunications Conference*, 1974.
16. "Space Shuttle Ranging Link Design" (with K. Tu and E. Dodd), *Proceedings of the 1975 Instrument Society of America Conference and Exhibit*, October 6-9, 1975.

17. "ATS 6 Quadriphase Modem Tests" (with K. Tu), *Proceedings of the 1975 Instrument Society of America Conference and Exhibit*, October 6-9, 1975.

18. "Digital Speech Processing for the Space Shuttle Program" (with G. K. Huth), *Proceedings of the 1975 National Telemetering Conference*, December 1-3, 1975.

19. "Shuttle Adaptive Delta Modulator Design and Performance" (with H. Vang), *Proceedings of the 1975 National Telemetering Conference*, December 1-3, 1975.

20. "Simplified APC for Space Shuttle Applications" (with S. Hutchins), *Proceedings of the 1975 National Telemetering Conference*, December 1-3, 1975.

21. "Sequential Versus Viterbi Decoding for RF Data Transmission Links" (with G. K. Huth), *Proceedings of the 1976 Instrument Society of America Conference and Exhibit*, October 13, 1976.

22. "Modulation for Digital Communications over Coherent and Noncoherent Channels", *Proceedings of the 1976 Instrument Society of America Conference and Exhibit*, October 13, 1976.

23. "Modulation and Coding for Spread Spectrum Communication Systems" (with G. K. Huth), *Proceedings of the 1976 National Telecommunications Conference*, 1976.

24. "Phase Multiplexing for Three-channel Data Transmission" (with G. K. Huth and S. Udalov), *Proceedings of the 1976 National Telecommunications Conference*, 1976.

25. "Effects of Phase Noise on the Performance of Two-Way Coherent Communications Links" (with K. Tu and G. K. Huth), *Proceedings of the 1976 National Telecommunications Conference*, 1976.

26. "A Tri-State Delta Modulator for Run Length Encoding of Video" (with G. C. Collins and I. M. Paz), *Proceedings of the 1976 National Telecommunications Conference*, 1976.

27. "Experimental Results for FSK Data Transmission Systems Using Discriminator Detection" (with J. W. Seyl and B. G. Smith), *Proceedings of the 1976 National Telecommunications Conference*, 1976.

28. "Shuttle Ku-Band Bent-Pipe Implementation Considerations" (with J.W. Seyl and G. K. Huth), *Proceedings of the 1977 National Telecommunications Conference*, 1977.

29. "Space Shuttle Utilization of TDRSS Services" (with S. W. novosad and T. W. Sheehan), *Proceedings of the 1977 National Telecommunications Conference*, 1977.

30. "Payload Data Processing for the Space Shuttle Program (with W. E. Teasdale and G. K. Huth), *Proceedings of the 1977 National Telecommunications Conference*, 1977.

31. "Frame Synchronization for the Space Shuttle TDM Communications" (with K. Tu), *Proceedings of the 1977 Instrument Society of America Conference and Exhibit*, October 17-20, 1977.

32. "Digital Coding of Shuttle TV" (with A. Habibi), *Proceedings of the Society of Photo-Optical Instrumentation Engineers 20th Annual Technical Symposium*, 1977.

33. "Overshoot Suppression in Tri-State Delta Modulation Channels" (with G. C. Collins and I. M. Paz), *Proceedings of the IEEE Region V. Annual Conference*, 1977.

34. "The Space Shuttle Orbiter Telecommunications System" (with R. W. Moorehead), *IEEE Communications Society Magazine*, May 1977.

35. "Performance of Bi-Phase Digital FM Transmission" (with C. Kwan and R. S. Simpson), *IEEE Transactions on Communications*, 1977.

36. "Effects of Asymmetry on Shuttle Ku-Band Communications Link Performance" (with M. K. Simon and K. Tu), *IEEE Transactions on Communications*, November 1978.

37. "Potential Digitization/Compression Techniques for Shuttle Video" (with A. Habibi), *IEEE Transactions on Communications*, November 1978.

38. "Data Asymmetry Analysis for Space Shuttle Communications Link" (with M. K. Simon and K. Tu), *Proceedings of the 1978 International Telemetering Conference*, 1978.

39. "Digital Encoding of Shuttle Video" (with A. Habibi), *Proceedings of the 1978 International Telemetering Conference*, 1978.

40. "Spread Spectrum Techniques for the Space Shuttle" (with G. K. Huth), *Proceedings of the 1979 National Telecommunications Conference*, 1979.

41. "Performance of Code Division Multiple Access Systems" (with C. L. Weber and G. K. Huth), *Proceedings of the 1980 International Conference on Communications*, 1980.

42. "Performance Considerations of Frequency-Hopping Multiple Access" (with C. L. Weber and G. K. Huth), *Proceedings of the 1980 National Telecommunications Conference*, 1980.

43. "Tutorial on Spread Spectrum Communications" (with D. L. Schilling and R. L. Pickholtz, *National Telecommunications Conference*, 1980.

44. "Spread Spectrum Communications" (with D. L. Schilling and R. L. Pickholtz), *Proceedings of the 1980 National Telecommunications Conference*, 1980.

45. "Performance Considerations of Code-Division-Multiple Access Systems" (with C. L. Weber and G. K. Huth), *IEEE Transactions on Vehicular Technology*, February 1981.

46. "Tri-State Delta Modulation System for Space Shuttle Digital TV Downlink" (with S. Udalov, G. K. Huth, and D. Roberts), *Proceedings of the 1982 National Telemetering Conference*, 1982.

47. "RL Encoding of a Tri-State Video Delta Modulator" (with S. Udalov, G. K. Huth, and D. Roberts), *Proceedings of the 1982 National Telesystems Conference*, 1982.

48. "Past and Prospective Future Applications of Spread Spectrum" (with G. K. Huth), *Proceedings of the First Canadian Domestic and International Satellite Communications Conference*, 1983.

49. "Data Communications" (short-course text), Integrated Computer Systems, Los Angeles, California, 1983.

50. "Analog and Digital Communications Systems" (short-course text), SCS Telecom, Sands Point, New York, 1984.

51. "Digital Communications Systems" (short- course text), CADSA, Inc., Webster, Texas, 1984.

52. "Satellite Communications" (short-course text), SCS Telecom, Sands Point, New York, 1985.

53. "Systems Engineering" (short-course text), SCS Telecom, Sands Point, New York, 1986.

54. "TI-IN Network: A Model for Worldwide Satellite Transmitted Academic Resources" (with P. S. Tinsley), Education in the 90's: Challenges of the New Information Technologies, *Proceedings of the Fifth International Conference on Technology and Education*, Edinburgh, Scotland, March 1988.

55. "Distance Learning: Integrated Technology Applications" (with P. S. Tinsley), *Proceedings of the Global Satellite Communications Symposium*, Nanjing, China, May 31, 1991.

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CADSA, Inc., is a small company which has been and continues to be engaged in a wide range of activities falling under the general categories of "communications" and/or "data." CADSA's areas of expertise include systems engineering; hardware/software design, development, test, and evaluation; system design and operations; design and development of specialized products and devices; provision of turnkey communications services (voice, data, video, etc.); provision of transportable C-band/Ku-band uplink services; provision of field support services (site surveys, installations, maintenance, etc.); and consulting services in many specialized categories. CADSA has designed, installed, and maintained numerous satellite earth stations -- both C-band and Ku-band, uplink and downlink -- for many customers.

One of CADSA's major projects was for Tenneco Exploration and Production Company. CADSA designed and participated in the implementation of a C-band voice/data/facsimile network for providing full-time communications between Tenneco's corporate offices in Lafayette, Louisiana, and several of their remote production rigs in the Gulf of Mexico, the Alaskan North Slope region, etc. The equipment for this network was specially designed (ruggedized) for transportation via marine or air transport to isolated destinations.

CADSA was also heavily involved in the design and implementation of the USCI (United Satellite Communications, Inc.) video network, which was the first operational DBS (direct broadcast satellite) system in the United States. CADSA's contribution to this effort included extensive analysis and preparation of the technical portions of the FCC filings that resulted in regulatory approval of the use of medium-power FSS (fixed satellite service) satellites for provision of DBS services to the home consumer market. CADSA also participated in the design of the STARLOK video scrambling system that was developed by General Instrument for USCI.

Another significant CADSA project was the total engineering effort associated with the design, development, implementation, testing, maintenance, and operations of all elements of TI-IN Network, a provider of satellite-based interactive (one-way video/data, two-way audio/data) educational programming. CADSA designed, developed, and manufactured several specialized microprocessor-based items of equipment which provided features such as electronic writing tablet and wireless keypad data response from remote classrooms; customized, automated audio talkback; and addressable hardcopy distribution. CADSA has also provided equipment, as well as installation and maintenance services, to several other educational television networks including KET, SERC, and ASTS.

More recently, CADSA was involved with the design and implementation of a digital video compression system for NTU (National Technological University) to replace their satellite-based analog system. The new network utilizes IRDs (integrated receiver-decoders) provided by CLI (Compression Laboratories, Inc.), but these IRDs are integrated into CADSA-designed "Subscriber units" containing a 80286-based processor with several custom-designed expansion cards to provide various features such as PCM audio (multiplexed with an auxiliary data channel); IRD remote channel select; VCR remote control; independent video, audio, and data channel addressability; broadcast facsimile; and equipment health and status monitoring/reporting. CADSA was responsible for the design, development, integration/test, and manufacturing efforts associated with this project, and continues to be NTU's sole supplier of Subscriber Units.

CADSA provides a complete line of broadcast data products for use in conjunction with CLI's SpectrumSaver digital video system. (This product line can be customized to interface with any broadcast video system, either digital or analog.)

Another product line offered by CADSA allows remote control of VCR's and other audio-visual devices, either on a network-wide basis in the case of satellite delivery systems, or from wall-mounted classroom keypads in a campus setting.

CADSA offers unique capabilities which continue to attract customers ranging from small "startup" operations (frequently still in the conceptual phase) to very large companies which are dominant in their areas.

VALERIE CHAKEDIS

RD # 1 BOX 270 C
AVERILL PARK NEW YORK, 12018
(518) 674-8010

Accomplishments

Direct Math/Science Mini-Grant Program of the U.S. Department of Education Star Schools Project for State University of New York Office of Educational Technology and the Great Lakes Collaborative of Michigan. Facilitate development of 23 school sites utilizing multiple telecommunications technologies to access world-wide instructional resources.

Directed the Bureau of Education and Training with 16 staff and a budget of $2,200,000. Supervised the production and implementation of training curricula and videos in areas such as Consumer Rights, Patient Management, Personal Care Model, Intensive Case Management, Emergency Medial Services, and Managing Crisis Situations. Approximately 15,000 public mental health employees were trained in these programs.

Produced and marketed consumer written videotapes designed to provoke exploration of the mental health consumer experience by clinicians, families, advocates, students and other consumers. The videotape was purchased by more than 100 private mental health agencies and educational institutions.

Produced teleconference on Cultural Diversity for New York State Public Mental Health Policymakers. Teleconference was viewed by approximately 600 people in 28 sites statewide.

Directed a Career Development program for Mental Health Therapy Aides in 18 psychiatric centers. The $500,000 program enabled approximately 660 Aides to obtain Associate college degrees.

Supervised seven Division for Youth training sites which provided consultative and training services to 30 facilities with approximately 2500 facility staff and managers.

Created and conducted training programs in counseling, behavior management, substance abuse, situational leadership, and case management of juvenile offenders in residential care. Instructed over 1000 counselors, teachers, managers and health staff in 20 facilities in these programs.

In association with the Innovation Group of the Rensselaerville Institute, provided consultation in Outcome Funding, a results focused approach to government resource allocation for a state agency in Georgia.

Work Experience

Learning Associates, Averill Park, New York

- Director (October 1992-Present)
  Consulting firm specializing in individual and organizational change through learning

New York State Office of Mental Health, Albany, New York

- Coordinator, Multicultural Awareness Program for Policymakers (November 1991-October 1992)
- Mental Hygiene Program Specialist (November 1990-November 1991)
- Acting Director, Bureau of Education and Training (January 1990-November 1990)
- Assistant Director, Bureau of Staff Development and Training (April 1988-January 1990)

Work Experience (continued)

New York State Division for Youth, Albany, New York

- Assistant Director, Bureau of Staff Development and Training (July 1981-April 1988)
- Associate Trainer, Bureau of Staff Development and Training (January 1980-July 1981)
- Senior Trainer, Bureau of Staff Development and Training (September 1977-January 1980)

Bay Ridge High School, Brooklyn, New York

- Teacher of Speech, Drama, and English (January 1972-June 1976)

Education And Professional Development

Doctor of Education in Adult and Continuing Education, Teachers College, Columbia University (1989-1992)

Master of Professional Studies in Humanistic Education, State University of New York at New Paltz (1978-1981)

Master of Fine Arts in Theater, City University of New York at Brooklyn College (1968-1973)

Bachelor of Arts in Speech and Hearing (Communication), City University of New York at Brooklyn College (1964-1968)

Teleconference, Cornerstones of the Learning Organization, Dr. Peter Senge, PBS and The AED Foundation, Albany, New York (December 1993)

Conference, Leadership and the New Sciences, Dr. Margaret Wheatley, Governor's Office of Employee Relations, Level I Alumni Meeting, Albany, New York (April 1993)

Teleconference, Creating Learning Organizations: Growth Through Quality, AED Foundation, Albany, New York (February, 1993)

Conference, The Learning Organization, Dr. Peter Senge, Governor's Office of Employee Relations, Level I Alumni Meeting, Albany, New York (September, 1992)

Workshop, Videoconferencing, New York Network, State University of New York, Albany, New York (April 1992)

Teleconference, Quality Management, Dr. W. Edward Deming, Governor's Office of Employee Relations, Albany, New York (April 1991)

Affiliations

Chair, New York State Training Council
Member, American Association for Adult and Continuing Education
Member, American Society of Training and Development
Member, Juvenile Justice Trainer's Association
Member, Editorial Review Board, Managing New York State, Quarterly Magazine

RESUME

Donald S. Bruno
116 Thomas Cartwright
Williamsburg, Virginia 23185

Home Phone: (804) 229-2871
Work Phone: (804) 221-2330

Professional Training

- B.A. Degree in Political Science and Music from West Liberty State College
- M.A. Degree in Public School Administration from the College of William and Mary
- Certificate of Advanced Study in Public School Administration from the College of William and Mary
- Old Dominion Fellow in the Humanities at the University of Virginia

Work Experience

	Executive Director, Urban Superintendents Assn of America
1991 -	Executive Director, Virginia Urban Schools Association
1984 - 1991	Superintendent of Schools for the Newport News Public Schools in Newport News, Virginia
1974 - 1984	Superintendent of Schools for the York County Public Schools in Yorktown, Virginia
1970 - 1974	Assistant Superintendent for the York County Public Schools in Yorktown, Virginia
1968 - 1970	Director of Personnel and Finance for the York County Public Schools in Yorktown, Virginia
1966 - 1968	Principal of Poquoson High School in Poquoson, Virginia
1964 - 1966	Principal of Poquoson Elementary School in Poquoson, Virginia
1956 - 1964	Elementary, Middle School, and High School Teacher for the Newport News Public Schools in Newport News, Virginia
1952 - 1956	Served in the United States Air Force

Awards and Recognitions

- Chosen by Executive Educator magazine as one of "The Executive Educator 100" in 1990
- Awarded the 1988 John F. Kennedy Center and Alliance for Arts Education "School Arts Administrator Award"
- Recipient of 1991 "Award of Honor" from National School Public Relations Association
- Recipient of 1991 "Leadership Award" from Virginia Association of Urban Schools
- Selected as Newport News 1989 "Administrator of the Year" by non-certified personnel
- Recipient of Exchange Club's highest civic award, "The Book of Golden Deeds"
- Brought national recognition to the Newport News School System (Since 1984, six U.S. Department of Education Excellence Awards, three National Drug-Free School Awards, National Chapter One Award for Pre-K Programs, State Model Middle School)
- Proposed and provided leadership for the development of a regional technical and math/science magnet school known as New Horizons
- Testified before the United States Congress, Virginia General Assembly and Virginia Board of Education on various topics such as school finance, effective teaching, educational equity, and professional relationships
- Guest speaker, presenter, and lecturer at numerous regional, state, and national conferences and for various college classes

Accomplishments (Newport News Public Schools, 1984 - 1991)

Instructional Initiatives

- Divisionwide "Power Writing Program"
- Integrated Reading Program
- 75 School/Business Partnerships
- Critical Thinking Skills Program (Social Studies, Grades 7-8)
- Pre-K Program for 4-Year-Olds
- Math-Science Magnet School
- Institute for the Arts
- At-Risk Initiatives (15:1 primary program)
- Vocational Training Programs in Television and Radio
- FOCUS -- School Based Cooperative Decision Making
- Executive Academy and Leadership Development Program for Principals
- Family Life Program, K-12
- Drug Education Program, K-12
- Divisionwide Staff Development Program

Finance and Facilities

- Per pupil cost is one of the lowest of urban school divisions in Virginia, while teacher salaries rank in the top four in the State.
- Provided leadership for the construction of 3 elementary schools, 2 middle schools, a Television Communications Center, air-conditioning of 15 schools, and site acquisition for a future high schoiol.
- Reduced local contribution rate to budget while increasing revenues from federal and state sources

Professional and Civic Organizations

Phi Delta Kappa
AASA -- American Association of School Administrators
VASS -- Virginia Association of School Superintendents
National and State School Boards Associations
National Association of Federally Impacted Schools (Board of Directors and Past President)
Virginia Committee for Fair Impact Air Funding (Past President)
Virginia Association of School Business Officials
Virginia Association of Urban Schools (Chairman)
National, State, and Local PTA (Life Member)
Peninsula Vocational Training Council
Hampton Roads Educational Telecommunications Association (Board of Directors)
Peninsula Private Industry Council
Cultural Alliance of Hampton Roads (Board of Directors)
Newport News Boys Club (Board of Directors)
Newport News Rotary Club

Personal Data

- Born in Weirton, West Virginia
- Married (Wife, MaryAnne, is Director of the Peninsula Area Cooperative Educational Services)
- Interests: Swimming, running, music, art, theatre, tennis, gardening, travel, and reading

JAMES H. STRONGE

SCHOOL OF EDUCATION
COLLEGE OF WILLIAM & MARY
WILLIAMSBURG, VIRGINIA 23185
(804) 221-2339

Synopsis of Qualifications:
A background is presented which demonstrates a specialization in educational administration and planning as supported by appropriate experience at the elementary/secondary level, and research and teaching at the higher education level. Areas of particular emphasis in training and experience include personnel administration, educational policy analysis with an emphasis on school organizational effectiveness, and educational planning.

Educational Background:
PhD Educational Administration and Planning
The University of Alabama (Tuscaloosa), 1983
Designed for work related to planning, research, and administration of K-12 educational systems. Management skills emphasized in major area of study include: personnel management, fiscal and budgetary operations, school organization, and school law. Approved minors include: educational planning, educational research, guidance/counseling, and network analysis (proficiency). GPA - 4.0

MA Guidance and Counseling
University of Alabama in Birmingham, 1976
Designed for responsibilities related to human resource services.

BS Secondary Education
University of Alabama in Birmingham, 1974
Specialty areas include preparation for instruction at the secondary level in history and English.

Personal:
Biographical: Married with two children, good physical condition.

Honorary Organizations and Awards: Most Outstanding Student Award, Area of Administration and Planning, College of Education, The University of Alabama, 1983

Phi Delta Kappa, College of William & Mary Chapter

Nominated for Burlington Northern Outstanding Young Faculty Award for Research, Bradley University, 1988

Certification & Specialized Training:
Alabama State Department of Education-
Administration (superintendency endorsement) and Counseling/Guidance

Professional Employment History:
College of William & Mary: Williamsburg, Virginia (1989-present)
- Associate Professor of Educational Administration (1989-present)

Tenure track position with responsibilities for teaching, conducting research, directing dissertations, and advising graduate students in the MEd, EdS, and EdD educational administration programs
- Program Coordinator, Educational Administration Program (1990-present)

Bradley University: Peoria, Illinois (1983-1989)
- Associate Professor of Educational Administration (1987-1989)
- Assistant Professor of Educational Administration (1983-1987)

Tenure track position with primary responsibilities for teaching graduate level educational administration courses (tenure granted)
- Director, Center for Research and Service, College of Education and Health Sciences (1986-1989). The Center served the following primary responsibilities: a) a vehicle to initiate and coordinate research activities within the College (grants, contracts, and foundation support); b) assess the research and service functions between the College and the community; c) regularly contact appropriate agencies and foundations ; d) provide a liaison between College faculty and the Bradley University Office of Research and Sponsored Programs for various externally-funded projects; and e) sponsor College seminars to share research and service information with faculty and community. College external grants and contracts requested (FY 1987-1988) $1,592,166; College external grants and contracts funded - $773,191.
- Director, Bradley University Institute for Gifted and Talented Youth (1986-1988). Administrator of university-wide institute serving the needs of gifted and talented students (grades 2-12) in an eight county area. Responsibilities included supervision of Institute budget; planning and administration of program offerings; and, serving as liaison between the Institute, Bradley University, 108 public and non-public school districts, and the business communities.
- Other Responsibilities: Lilly Endowment Faculty Fellowship (1987-1989). Coordinated development of MA in Institutional Administration and Advancement (36 hr. non-school administration program). Courses taught included: Educational Law, Educational Finance, The Principalship, School-Community Relations, Administrative Applications of Computers, Educational Research Applications.

Fairfield Board of Education: Fairfield, Alabama (1984-1983)
(Greater Birmingham Area)

- Central Office Administration 1978-1983
- Special Education Coordinator 1977-1978
- Guidance/Counselor (secondary level) 1976-1977
- Secondary Teacher (history) 1974-1977

Major responsibilities as central office administrator included: personnel administration, finance, and federal programs administration.

Research Activities:

Publications

Personnel administration with emphases in a) evaluation and b) the principal's role in effective schools.

- (1992). A performance evaluation model for professional support personnel. Educational Evaluation and Policy Analysis, 14, 175-180. With V. Helm.

- (Accepted for 1992/93 publication date). Evaluating special education teachers and support personnel. Chapter in Program Leadership in Special Education Manual. Richmond, VA: Virginia Department of Education.

- (Accepted). Middle management vs. instructional leadership: An artificial dichotomy. NASSP Bulletin.

- (1991). Evaluation of professional support personnel in education. Book, 297 pages. Newbury Park, CA: Sage Publications. With V. Helm.

- (1991). Dynamics of effective personnel evaluation systems: Technical, human relations, and conceptual domains. Journal of Personnel Evaluation in Education, 4, 405-411.

- (1991). Middle school climate: The principal's role in influencing effectiveness. Middle School Journal, 22 (5), 41-44. With C. Jones.

- (1990). Evaluating educational support personnel: A conceptual and legal framework. Journal of Personnel Evaluation in Education, 4, 145-156. With V. Helm.

- (1990). Managing for productive schools: The principal's role in contemporary education. NASSP Bulletin, 74 (524), 1-5.

- (1989). Evaluation of ancillary school personnel. Illinois School Research and Development, 25, 83-90. With V. Helm.

- (1989). The post-educational reform role of Illinois Principals. Illinois Principal, 21(1), 18-19.

- (1988). Ancillary school personnel: An evaluation model. (Monograph Series Paper #3). Illinois Administrators' Academy, Illinois State Board of Education, Springfield, IL.

- (1988). Evaluation of ancillary school personnel training manual. (Technical manual for Illinois Administrator's Academy). Illinois State Board of Education, Springfield, IL, 232 pages.

- (1988). The elementary school principalship: A position in transition. Principal. (National Association of Elementary Principals). 67 (5), 32-33.

- (1987). The school building principal and inventory control: A case for computerization. CEFP Journal (Council of Educational Facility Planners International), 25 (6), 4-6.

- (1986). The functional role of the building-level administrator: Principal teacher or middle manager? Spectrum - Journal of School Research and Information, 4 (2), 38-40. With D. McVeain.

- (1986). Characteristics of administrative work: A survey of central Illinois principals. Illinois Principal, 17 (3), 4-5.

- (1985). Principals' attitudes toward minimum competency testing. Spectrum - Journal of School Research and Information, 3(1), 44-47.

Educational policy analysis with emphases in K-12 administrative and organizational effectiveness issues.

- (1992). Educating Homeless Children and Adolescents: Evaluating Policy and Practice. Book editor and contributing author. Newbury Park, CA: Sage Publications.

  Chapters authored:
  Chapter 1: The background: History and problems of schooling for the homeless Chapter 13: Programs with promise: Educational service delivery to homeless children and youth

- (In review). Emerging service delivery models for educating homeless children and youth: Implications for policy and practice. Submitted to Educational Policy.

- (In review). Proposal to serve as guest editor for of Education and Urban Society special issue devoted to homeless education policy issues.

- (In preparation). From access to success: Analysis of public policy toward the education of homeless children and adolescents.

- (1991). Legal barriers to the education of homeless children and youth: Residency and guardianship issues. Journal of Law and Education, 20, 201-218. With V. Helm. (Earlier version presented at AERA 1990 Annual Meeting accepted for inclusion in ERIC)

- (1990). Educating homeless children and youth: Issues and answers. Fastback Series monograph. Bloomington, IN: Phi Delta Kappa. With C. Tenhouse.

- (1987). Educating the culturally disadvantaged, gifted student. The School Counselor, 34, 336-344. With C. Lynch & C. Smith.

- (1986). Gifted education - a right or a privilege: The Federal perspective. G/C/T, 9(3), 52-54.

- (1986). Are gifted girls encouraged to achieve their occupational potential? Roeper Review - A Journal on Gifted Education, 9, 101-104.

- (1984). Personnel development: A special project on the education of gifted and talented youth for central Illinois teachers and students. Illinois Council for Exceptional Children Quarterly, 33(4), 29-33. With C. Lynch.

- (1984). Organizational characteristics of the high school: Factors affecting student achievement. The High School Journal, 68, 37-41.

- (1984). Minimum competency testing pros and cons: Is there really any difference? The Clearing House, 57, 217-219.

- (1983). Funding computer-related technology in the public schools. The Computing Teacher, 11(1), 13-15.

- (1982). Project Career. Roeper Review - A Journal on Gifted Education, 5, 36-38. With M. Middlebrooks.

Scholarly Papers and Talks

- (Submitted for 1993). Educational Opporunity for Homeless Children and Adolescents: Alternatives for Policy and Practice. Division A symposium to be presented at the Annual Meeting of the American Educational Research Association, Atlanta, GA.

- (Submitted for 1993). Hands-on distance learning: A new horizon for middle level education. Middle Level Education Special Interest Group to be presented at the Annual Meeting of the American Educational Research Association, Atlanta, GA.

- (Submitted for 1993). Homeless education: How schools can lower their barriers for access and success. Paper to be presented at the American Association of School Administrators University Professors Conference, Orlando, FL.

- (Accepted for 1992, November). Building community awareness for the educational needs of homeless students: A Chicago case study. Invited speech to be presented at the National Association of State Coordinators for the Education of Homeless Children and Youth, Dallas, TX.

- (Accepted for 1992, December). A comprehensive staff development program promoting transfer of knowledge in technology-oriented domains. Paper to be presented at the National Staff Development Council, Washington, DC. With M. Wallen.

- (Accepted for 1993, February). Urban cities and counties organizing for solutions and funding. Panel presentation to be made at the American Association of School Administrators, Orlando, FL.

- (1992, April). Educational opportunity for homeless children and youth: From access to success. Division A paper presented at the Annual Meeting of the American Educational Research Association, San Francisco, CA.

- (1992, March). Educating homeless children and youth: Overcoming the barriers. Keynote address presented to the Philadelphia Area Chapters (University of Pennsylvania, Temple University) of Phi Delta Kappa, Philadelphia, PA.

- (1992, February). Sociological aspects of homelessness. Invited paper presented to the United States Department of Education, State Coordinators for Education of Homeless Children and Youth Conference, Washington, DC.

- (1992, February). Barriers to the education of homeless students: Real or perceived? Talk presented to the Chicago Public Schools' Homeless Service Providers Workshop, Chicago, IL.

- (1991, October). Programs with promise: Educational service delivery for homeless children and youth. Invited address to the Annual Conference of the National Association of State Coordinators for the Education of Homeless Children and Youth Conference, New Orleans, LA.

- (1991, April). Emerging service delivery models for educating homeless children and youth. Division A paper to be presented at the Annual Meeting of the American Educational Research Association. Chicago, IL.

- (1991, April). Evaluation of professional support personnel. Division A symposium paper to be presented at the Annual Meeting of the American Educational Research Association. Chicago, IL. With V. Helm.

- (1991, October). Educating homeless children and youth. Talk to be presented to the Washington Metro Area Chapters (American University, George Washington University, Howard University, University of the District of Columbia, and University of Maryland) of Phi Delta Kappa, Washington, DC.

- (1990, April). Residency and guardianship requirements as barriers to the education of homeless children and youth. Division A paper presented at the Annual Meeting of the American Educational Research Association. Boston, MA.

- (1990, October). Educating homeless children and youth: Issues and answers. Talk presented to the Ohio State University Chapter of Phi Delta Kappa, Columbus, OH.

- (1987). Personnel evaluation. Talk presented to the Illinois State Board of Education Pupil Personnel Advisory Council, Springfield, IL.

- (1986). Evaluation of the principal as instructional leader. Talk presented at the Illinois Administrators' Academy, Peoria, IL.

- (1986). The principal as instructional leader. Talk presented to the Peoria Public School District Principals' Association, Peoria, IL.

- (1984). Teacher negligence and the Catholic school. Talk presented at the National Catholic Education Association Convention, Boston, MA.

- (1984). School law: National trends. Central Illinois Superintendents' Round Table, Peoria, IL.

Grant Activities:

Competitively funded grants and contracts with responsibilities for proposal development and project administration include the following:

College of William & Mary:

- U.S. Department of Education, Office of Educational Research and Improvement, "Research and Development Center on Teacher Performance and Educational Accountability," project director for College of William & Mary portion of grant (consortium of universities with Western Michigan University as fiscal agent), beginning date November 1992.

- U.S. Department of Education, Jacob K. Javits Gifted and Talented Students Education Act, "Research and Demonstration Project for Culturally Diverse, Low Income, and Handicapped Gifted and Talented Learners," project staff member, 1990-1991.

- Newport News, VA, Public Schools, "Forward: 2000," Long range planning project for school district policy development, project coordinator, 1990, $5,200 contract.

Bradley University:

- Illinois State Board of Education, Stewart B. McKinney Homeless Assistance Act, "The Children of Homeless Families in Illinois and Their Educational Status," $90,000.

- Illinois State Board of Education, "Illinois Administrators' Academy Training Module for Evaluation of Ancillary School Personnel," 1987-88, $42,600.

- Lilly Foundation, "Bradley University Faculty Development for Curriculum Infusion of Computer Technology," member of Project Development Committee and Chairman, Bradley University Advisory Committee, 1986-1989, $75,000.

- Illinois State Board of Education, "Project EXCEL: Excellence in Curriculum, Experience, and Learning," Institute for gifted/talented students and personnel training for teachers of the gifted, 1984-1986, $98,000.

- Bradley University Board for Research and Creativity (BRAC), "The Functional Role of the School Principal: Instructional Supervisor or Middle Manager?" 1984, 1988

Institutional & Public Service:

College of William & Mary:

- Coordinator, Educational Administration Program Area, 1990-present
- Member, Admissions and Financial Aid Committee, 1990-present (Chair, 1992-)
- Chair, School of Education Affirmative Action Committee, 1991-1992
- Member, College Affirmative Action Committee, 1991-present
- Member, Gifted Education Faculty Advisory Committee, 1989-present
- Faculty liaison, Virginia Urban Schools Association

Professional Consulting Services:

Consulting services have been provided to more than 100 national, state, and local organizations. The primary areas of emphasis for these speeches, workshops, and technical assistance services include: school organizational effectiveness, personnel development and evaluation, management applications of microcomputer technology, and selected school curricula area (program development and gifted education). Consulting contracts have included: a) school district reorganization studies involving 43 school districts; b) personnel development - job descriptions and evaluation systems for school principals; c) planning and evaluation of educational service delivery systems; and d) policy planning and implementation for educating homeless children and youth.

Current projects include:
- External evaluator for Knowledge Transfer Pilot Project involving distance learning for the Consortium For International Earth Science Information Network (CIESIN) funded through Saginaw Valley State University by the National Aeronautics and Space Administration.
- External evaluator for Global Change Middle School Multimedia Project for the Consortium For International Earth Science Information Network (CIESIN) funded through Saginaw Valley State University by the National Aeronautics and Space Administration.
- Technical consultant and program planning facilitator to the Chicago Public Schools' Education of Homeless Children and Youth Exemplary Grant Program.

Selected Workshops and Other Professional Presentations:
- Evaluation of Ancillary School Personnel: Trainer of Trainers Workshop (Illinois Administrator's Academy - developed and implemented state-wide personnel evaluation system, 1988)
- Computer Literacy Workshop (Bellarmine College, KY, 1987)
- Computer Literacy Workshop (Berea College, KY, 1987)
- Personnel Development: The Effective Classroom (Knoxville and Abingdon School Districts, IL, 1986)
- School District Reorganization (Channel 19, ABC television affiliate, Peoria, IL, 1985)
- Formulating a State Education Philosophy - Finance (Illinois Education Reform and School Improvement Conference, 1984)
- The Law, the Principal, and Student Discipline (Illinois State Board of Education School Improvement Workshop, 1984)
- Computer-assisted Student Scheduling (Mid-Illini Computer Consortium, 1984)
- Fixed Asset Accounting with the Microcomputer Workshop (The University of Alabama, 1983)
- Computer Technology for Administrators (Alabama Council for School Administrators and Supervision, 1983)
- Administrative Uses of the Microcomputer (Brewer State Junior College, Fayette, AL, 1983)
- The Microcomputer and Instructional Support: A Users Guide (Alabama State ECIA, Chapter I Conference, Mobile, AL, 1983)
- Use of the Microcomputer in Fixed Asset Accounting (Alabama Council for Computer Education Annual Meeting, Mobile, AL, 1983)

Community Service:

- Member, Tidewater Regional Assessment Center Executive Board, 1989-1991
- Tomlinson College, TN, Board of Trustees, 1981-1990 (Chairman, 1987-1990)
- Phi Delta Kappa, Bradley University Chapter, Treasurer, 1986-1987; Faculty Advisor, 1987-1989
- North Central Association of Colleges and Schools and Southern Association of Colleges and Schools - accreditation evaluation teams for selected high schools
- Illinois Rural Education Conference Planning Committee, 1986-1988
- Alabama State Chapter I Coordinator's Advisory Council, 1981-1983
- Alabama State Testing Program Advisory Committee, 1982-1983

Bradley University:

- University Senate
- Board for Research and Creativity - University board for internally funded research and creative projects
- University Academic Grievance Committee, Chairperson
- University Intellectual Property Committee
- University Long-Range Planning Committee
- University "PCs for Faculty Program," ad hoc committee, Chairperson
- University Committee to Study Academic Programs of College Credit for Advanced High School Students, ad hoc committee, Chairperson
- University Strategic Planning - Research, Creative, and Professional Development, ad hoc committee
- Lilly Endowment Grant Advisory Committee, Chairperson
- College of Education and Health Sciences Executive Committee
- College of Education and Health Sciences Strategic Planning Committee
- College of Education and Health Sciences Computer Technology Committee
- Member, search committees for College of Education and Health Sciences Dean, Graduate School Associate Dean, and numerous faculty positions
- Prepared Department of Educational Leadership and Human Development graduate survey and report for NCATE 10-year review

GEORGE M. BASS, JR.
Associate Professor (1982)
Tenured (1982)
Faculty Appointment (1976)
Program: Educational Foundations

EDUCATION

Ph.D.	1977	University of Minnesota	Educational Psychology; Child Development
B.A.	1969	Yale University	Psychology

PROFESSIONAL EXPERIENCE

1976- The College of William and Mary, Assistant Professor, Associate Professor
1971-1976 University of Minnesota,
  Area Health Education Center, Research Fellow, 1974-1976
  Instructor, Educational Psychology, 1973-1976
  Research Assistant, 1972-1974
  Teaching Assistant, 1971-1973
1969-1971 Philadelphia Public Schools, Elementary School Teacher

SELECTED RESEARCH AND DEVELOPMENT ACTIVITIES

Evaluator on U. S. Department of Education Javits Grant: National Dissemination Project on Science Curriculum (with Roger Ries) Began Fall 1992 and continues

Evaluator on Westmoreland Chapter I evaluation (with Tom Ward) January - July 1993

Evaluator on Dr. Heather MacDonald's National Science Foundation for Curriculum Innovations in Geology. Began Summer 1992 and continues.

Virginia Department of Education/University Research Consortium Team on Technology. Began Spring 1992 and continues.

Design, development, implementation, and analysis of the evaluation for the 1990, 1991, 1992 and 1993 Virginia Governor's School in Science, with R. Ries.

Design and development of Project Mandala (U.S. Department of Education Javits Fund for Gifted and Talented Students) curriculum for at-risk gifted students. 1990-1992

Co-Author, "Project ET^3: Electronic Technology, Today and Tomorrow," with R. Ries, & W. Sharpe. Virginia Block Grant Competitive Award to Williamsburg-James City County. Funding Level: $15,000 (Awarded January 1983, 1 year).

Co-Author, "Project CICERO: Computer Instruction and Career Education Through Related Operations," with R. Ries, and school system personnel. Title IV-C Award to Williamsburg-James City County. Funding Level: $94,000 (Awarded July 1980, 3 years).

"Clinical Simulation Writer." Foundation for the Advancement of Computer-Aided Education, June, 1980.

Co-Director, "Project MASS: Microcomputer Assisted Study Skills," with R. Ries. Virginia Council of Higher Education. Funding Level: $30,000 (Awarded April 1980, 2 years).

Evaluator of four federally funded and state-funded telecommunication projects for the Center for Excellence January 1980-December 1981 (development of data collection instruments and procedures, analysis of data, presentation of conculsions and recommendations for future actions)

Bass, George M., Jr.

SELECTED PUBLICATIONS AND EDITORIAL ASSIGNMENTS

Publications

Bass, G. M. (1993) Software review: South Dakota. Journal of Behavioral Education, 3 (3), 323-329.

Bass, G. M. (1992). Book review: The New Handbook of Teacher Evaluation: Assessing Elementary and Secondary Teachers. Journal of Educational Administration and History, 24 (1), 124-125.

Bass, G.M. (1990). Book review: Assessing the impact of computer-based instruction. Educational Technology, 30 (5), 55-56.

Bass, G.M. (1990). Book review: Successful secondary skills. Journal of Educational Administration and History, 22 (2), 92-93.

Bass, G.M. (1989). Book review: Programming instructional software. Educational Technology, 29 (7), 56-57.

Bass, G.M., & Ries, R. (1988). Awareness. In R. McNergney (Ed.), Guide to classroom teaching (pp. 121-144). Boston: Allyn and Bacon.

Bass, G.M. (1988). Book review: Computers and education. Educational Technology, 28 (12), 54-55.

Bass, G.M., Ries, R., & Sharpe, W. (1986). Teaching basic skills through microcomputer assisted instruction. Journal of Educational Computing Research, 2 (2), 207-219.

Bass, G.M. (1985). Ed Tech Product Review: QUILL. Educational Technology, 25 (5), 52-53.

Bass, G.M. (1984). Book review: Using a microcomputer in the classroom. Educational Technology, 24 (9), 50-51.

Bass, G.M. (1984). Teaching critical thinking skills with CAI. Electronic Learning, 4 (2), 32-34.

Bass, G.M. (1984). Software review: Fay--That Math Woman. Educational Technology, 24 (8), 55-57.

Bass, G.M., & Perkins, H. W. (1983). A comparative look at educational software: Elementary critical reading packages. Electronic Learning, 3 (3), 86-87.

Bass, G.M. (1981). Chapters 8 and 10 in M.J. Gander, & A.Q. Gardiner (Eds.), Child and adolescent development. Boston: Little, Brown.

Bass, G.M., Moller, J., & Johnson, P. (1981). New techniques in the construction of patient management problems. British Journal of Medical Education, 15, 150-153.

Bass, G.M., Johnson, P., & Moller, J. (1975). Analysis of expert diagnosis of a computer simulation of congenital heart disease. Journal of Medical Education, 50, 466-470.

SELECTED PRESENTATIONS

Bass, G.M., & Ries, R. (1993, November). Follow-up Evaluation of Stuidents' Experiences at Governor's Schools. Presented at the National Governor's School Conference, Charleston, SC.

Bass, G.M. (1993, June) Metacognitive Techniques in the Science Classroom. Presented at Summer Training Institute on Exemplary Science Curriculum and Instruction for High Ability Learners K-8, Williamsburg, VA.

Bass, G.M., & Ries, R. (1992, November). A university-based summer program in science for gifted high school students: The William and Mary Governor's School. Posterboard session at the National Association for Gifted Children, Los Angeles, CA.

Bass, George M., Jr.

Bass, G.M., & Ries, R. (1992, October). Alternative assessment models for governor's schools. Presented at the National Governor's School Conference, Richmond, VA.

Bass, G.M., Nagle, J., VanTassel-Baska, J., Owen, D., & Ries, R. (1991, November). The Virginia Governor's School for the Gifted in Science. Presented at the National Governor's School Conference, Greenbriar, WV.

Bass, G.M., & Lee, S. (1991, November). Metacognition curriculum and instruction. Presented at the Project Mandala Virginia Statewide Conference on Creating Positive Futures for At-Risk Gifted Learners, Williamsburg, VA.

Bass, G.M. (1991, August). Testing in the service of teaching. Presented for Poquoson County School System for middle and high school teachers, Poquoson, VA.

Bass, G.M. (1991, May). Educational computing: Impact & implications. Keynote speech presented at the Williamsburg-James City County School System Technology Fair.

Bass, G.M., & Korinek, L. (1990, October). Metacognitive strategies. Presented at the Serving the At-Risk Gifted Learner Conference, Williamsburg, VA.

Bass, G.M. (1989, April). Administrative uses of the microcomputer. Presented in a teleconference sponsored by the Virginia Center for Educational Leadership, Richmond, VA.

Bass, G.M. (1988, October). Problem solving and critical thinking. Presented at the annual meeting of the Virginia Psychological Association , Virginia Beach, VA.

Bass, G.M., Perkins, H., & Byrne, J. (1984, November). Can critical thinking skills be taught? Presented at the Virginia Department of Education Research, Evaluation, and Testing Conference.

Bass, G.M., & Perkins, H. (1984, June). The effects of microcomputer use on the teaching of critical thinking skills to middle school students. Presented at the National Educational Computing Conference.

Bass, G.M., Ries, R., & Sharpe, W. (1984, April). Back to the basics through microcomputers. Presented at the meeting of the American Educational Research Association, New Orleans, LA.

Bass, G.M. (1984, March). Educational software evaluation--Where's the BEEF? Presented at the Virginia Council of Teachers of Mathematics Annual Conference, Richmond, VA.

Bass, G.M., & Ries, R. (1983, February). The development and implementation of a microcomputer assisted study skills program. Presented at the Eastern Educational Research Association Sixth Annual Conference, Baltimore, MD.

Bass, G.M. (1983, April). Fitting the science teacher into a high tech society. Presented at the Spring Conference of the Virginia Association of Science Teachers, Richmond, VA.

Bass, G.M. (1983, April). Software evaluation: A review of instruments. Presented at the AEDS Symposium--Instructional and Administrative Update: Microcomputers in 1983, Williamsburg, VA.

Bass, G.M. (1983, December). Software evaluation criteria. Presented at the Virginia Department of Education Conference on Instructional Computing, Richmond, VA.

SELECTED WORKSHOPS AND CONSULTANCIES

Workshops

"Metacognitive Techniques in the Science Classroom" and "Authentic Assessment in Science" Henrico County teachers - March 1994

"Metacognitive Techniques in the Science Classroom" Virginia Beach teachers - February 1994

"Technology Summer Staff Development" Charles City County teachers - week length institute August 1993.

"Virtual Reality, Apparent Reality, Actual Reality" Speech to Charles City County high school students Sponsored by the Expanding Horizons Foundation, January 1993.

"Constructing and Giving Exams" One session seminar for selected new Arts and Sciences William and Mary faculty, October 1992

"Institute on Educational Computing." Charles City County teachers, two week all day sessions July-August, 1992.

"High Tech: Hope, Hype, or Hoax?" William and Mary Elderhostel, one week daily session Williamsburg, June 1992.

"New Educational Technology and Software," with T. Ward. School of Education Technology Seminar, May 1992.

"Metacognitive Thinking in a Science Curriculum." Science Curriculum Dissemination Grant training session for elementary and middle school teachers, Williamsburg, June 1991.

"Educational Technology." Colonial Williamsburg, Williamsburg, May 1991.

"Creative Thinking and Problem Solving." Governor's School in Science, Williamsburg, July 1990.

"Constructive Test Construction." Poquoson High School, Poquoson, VA, October 1988.

"Remember Clearly, Think Critically, Teach Creatively.' Sylvan Learning Center, Virginia Beach, March 1988.

Consultancies

Consultant with Charles City County on Instructional Technology, 1992-present.
Newport News Long-Range Planning Report for Computing, October 1991.
Guardian Life Insturance Company - Instructional Technology Design and Development, 1985-1987
Consultant, York County Schools, "Critical Thinking Project," 1983-1985.
Instructional Computer Consultant, Williamsburg-James City county Schools, "Project CICERO," 1981-1983.
Instructional Computer Consultant, Williamsburg-James City County Schools, "Project ET^3," 1983-1984.
Consultant, Virginia Department of Education, "Teaching Professional Staff," 1983-1984.
Consultant, Centex, "Evaluation of Projects," 1980-1983.
Consultant, Henry County, VA, "Project INPUT: Innovative Program for Utilizing Talent," with J. Byrne, B. Mattox, & N. Harkavy. Title IV-C Project, June 1981.

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The College of William and Mary in Virginia
Williamsburg, Virginia

RESUME

S. Stuart Flanagan, Professor Education
Tenured (1975)
Faculty Appointment (1968)

Education

Ed.D.	1968	University of Virginia	Mathematics Education
M.Ed.	1962	University of Virginia	Mathematics Education
B.S.	1958	Washington and Lee University	Pre-Medical; Science-Biology, Mathematics, Chemistry

Title of doctoral dissertation:
The Effects of Courses Employing SMSG Texts on Students' First Semester Grades

Professional Experience

1968 -	The College of William and Mary
1959 - 1968	St. Christopher's School, Richmond, Virginia, Teacher, Mathematics Department Chairman
1967 - 1968	Mathematics-Science Center, Summer, Visiting Instructor, Mathematics
1966 - 1967	University of Virginia, Instructor, Mathematics
1961 - 1967	Richmond Professional Institute, Evening School Instructor Mathematics
1958 - 1959	Varina High School, Teacher, Mathematics, Science, Chemistry

Grant Activities

Developed monograph to assist in Literacy Passport Testing--Mathematics, used by 30 school divisions in 1992. Distributed to ALL school divisions by the Virginia State Department of Education in 1993.

Author, Title II Grant Proposal for King and Queen County, Virginia Public Schools, Funded in 1988.

"Metric Education Grades 7-12." U.S. Department of Education in conjunction with six school divisions, 1979-1980.

"Metric Education Grades K-7." U.S. Department of Education in conjunction with six school divisions, 1978-1979.

"Instructional Improvement Implementation: Computing Science Curriculum Development Project." National Science Foundation Grant, 1974.

"Cooperative College-School Science Program." National Science Foundation Grant, Summer, 1973.

"Cooperative College-School Science Program." National Science Foundation Grant, Summer, 1970.

"Cooperative College-School Science Program." National Science Foundation Grant, 1969-70.

Refereed Publications

Flanagan, S.S. (1992). Making connections with LPT mathematics. Virginia Math Teacher, Winter.

Flanagan, S.S., & Doyle, T. (1991). The state of affairs - LPT mathematics. Virginia Mathematics Teacher, 18(2).

Flanagan, S.S., & Doyle, T. (1991). An alternative approach to student teaching Virginia Mathematics Teacher, 17(4).

Flanagan, S.S. (1990). The standards and Literacy Passport testing. Virginia Mathematics Teacher, 16 (7).

Flanagan, S.S., & Junod, L. (1986). Calculators belong in elementary school mathematics. The Virginia Mathematics Teacher, 12(3).

Flanagan, S.S. (1983). Affective evaluation. Monograph: Mathematics assessment for the classroom teacher, Virginia Council of Teachers of Mathematics.

Flanagan, S.S. (1980). Let's review the evidence. The Virginia Mathematics Teacher, 6(3).

Flanagan, S.S. (1979). Developed all student testing for ITEMS (Identifying and Teaching Essential Mathematical Skills) IV-C Project, North Carolina.

Flanagan, S.S. (1978). Where is the decline in achievement? VEA Journal, Fall.

Flanagan, S.S., & Ries, R. (1975). Know your testing program. Virginia Mathematics Teacher, Fall.

Flanagan, S.S. (1974). Mathematics: Activities that work. Written for the Supplement Skill Development Program mandated by the 1974 session of the Virginia General Assembly and implemented by the State Department of Education.

Flanagan, S.S. (1969). Effects of SMSG on college achievement in mathematics. School Science and Mathematics, December.

Invited Scholarly Papers and Talks

Flanagan, S.S. (1990, August). Literacy passport test/math component. Presented at Petersburg City Public Schools.

Flanagan, S.S. (1990, November). Effective mathematics software. Presented at the Instructional Technology in Education Conference, Old Dominion University.

Flanagan, S.S. (1990, November). Teaching implications for the Literacy Passport - mathematics. Presented to the Virginia ASCD Annual Conference, Williamsburg, VA.

Flanagan, S.S. (1990, November). Effective mathematics software. Presented to the Instructional Technology in Education Conference, Old Dominion University, Norfolk, VA.

Papers and Talks continued

Flanagan, S.S. (1990, March). LPT mathematics: Test analysis and remediation. Presented at the 15th Annual VCTM Conference, Charlottesville, VA.

Flanagan, S.S. (1990, February). Literacy Passport/NCTM standards. Presented at the Winter Session of the PCVM, Gloucester, VA.

Flanagan, S.S. (1989, November). Mathematics-technology-testing: The connection. Presented at the Interactive Technology in Education Conference, Hampton University, Hampton, VA.

Flanagan, S.S. (1989, November). Mathematics success for all - what are the implications? Presented at the Virginia State Department of Education Annual Conference of Elementary School Principals, Virginia Beach, VA.

Flanagan, S.S. (1989, October). Diagnosis and remediation for LPT. Presented at the 36th Annual State Mathematics Conference, Roanoke, VA.

Flanagan, S.S. (1989, October). Preparing students for success on the Literacy Passport Assessment. Presented at the Virginia Council of Mathematics Supervisors' Fall Meeting, Roanoke, VA.

Flanagan, S.S. (1989, October). Ideas for middle school mathematics to assist in literacy passport testing. Presented at the Literacy Passport Instructional Conference, Williamsburg, VA.

Flanagan, S.S. (1989, April). Literacy Passport Teaching: Instructional intervention. Presented at the 14th Annual Virginia Council of Teachers of Mathematics Conference.

Flanagan, S.S. (1988, October). Mathematics literacy testing: A practical approach through diagnosis. Presented at the Virginia Department of Education Annual Conference on Research and Testing, Richmond.

Flanagan, S.S. (1988, October). Virginia results of second internal study in mathematics and comparison on U.S. vs. Japanese achievement. Presented at the Virginia State Department of Education - 25th Annual State Mathematics Conference, Williamsburg.

Flanagan, S.S. (1988, December). Diagnosis and remediation in mathematics: What does it mean and what is needed? Presented at the Virginia State Department of Education Special Conference on Remedial Education, Richmond.

Flanagan, S.S. (1986, October). Estimation and mental arithmetic for the grades. Presented at th Annual State Department of Education meeting, Roanoke.

Flanagan, S.S. (1985, October). What's happening. Presented at the Twenty-third Annual State Mathematics Conference, Richmond.

Flanagan, S.S. (1984, Winter). Problem solving and teaching students to think. Presented at the Peninsula Council of Mathematics of Virginia Winter Conference, Hampton.

Flanagan, S.S (1984, May). Many faces of mathematics. Presented at the Mathematics Conference for Students, Williamsburg.

Papers and Talks continued

Flanagan, S.S. (1984, October) Current trends and problems in mathematics education. Presented at the Greater Richmond Council of Teachers of Mathematics.

Flanagan, S.S. (1983, December). Problem solving and teaching students to think. Presented to the Peninsula Council of Mathematics.

Flanagan, S.S. (1980, September). Applications of mathematics. Presented to Peninsula Council of Mathematics.

Flanagan, S.S. (1980, Fall). Status of K-12 mathematics/Problems and issues. Presented at the Mathematics and Computer Science Colloquium.

Flanagan, S.S. (1979, February). You choose the axiom. Presented at the Annual State Department Mathematics Conference, Virginia Beach.

Flanagan, S.S. (1979, April). Mathematics induction. Presented to the Annual meeting of National Council Teachers of Mathematics, Boston.

Flanagan, S.S. (1979, October). Applications of mathematics. Presented at the Annual meeting of Virginia Council of Teachers of Mathematics.

Flanagan, S.S. (1979, November). Computation boom during an application recession. Presented at the Potomac Region Mathematics Conference.

Flanagan, S.S. (1978, February). Massive erosion in computation: Where is the evidence? Presented at the Mathematics Conference for Elementary Classroom Teachers sponsored by the State Department of Education, Charlottesville.

Flanagan, S.S. (1978, September). Application of mathematics. Presented at the Peninsula Council of Mathematics of Virginia-Tidewater Council of Teachers of Mathematics Joint Conference, Hampton.

Flanagan, S.S. (1978, November). Mathematics competencies necessary to teach mathematics K-6. Presented to the Virginia Council of Supervisors of Mathematics.

Flanagan, S.S. (1977, February). The teacher and basic learning skills in mathematics. Presented at the Mathematics Conference for Elementary Classroom Teachers sponsored by the State Department of Education, Roanoke.

Flanagan, S.S. (1977, March). Relationship between developments regarding state testing program and minimum requirements for graduation. Presented at the Virginia Council of Teachers of Mathematics meeting, Harrisonburg.

Flanagan, S.S. (1977, May). Massive erosion: Where? Presented at the Greater Richmond Council of Teachers of Mathematics.

Papers and Talks continued

Flanagan, S.S. (1976, November). National Council of Teachers of Mathematics, Norfolk meeting, moderated the discussion on "The Effects of Calculus in the High School on College Calculus Performance;" delivered the paper, The effects of computer augmented instruction on algebra II and trigonometry.

Flanagan, S.S. (1975, November). What is a skills program in mathematics? Presented at the Conference of 500 Supplemental Skill Development Program sponsored by the State Department of Education, Richmond.

Flanagan, S.S. (1974, October). Curricular alternatives for seniors in the academic program. Presented at the National Council Teachers of Mathematics Meeting, Memphis.

Flanagan, S.S. (1970). Teaching mathematical induction. Presented at the National Council of Teachers of Mathematics Meeting, Raleigh.

Flanagan, S.S. (1970). Role of induction in teaching mathematics. Presented at the National Council Teachers of Mathematics Meeting, Portsmouth.

Flanagan, S.S. (1970). You choose the axiom. Presented at the Greater Richmond Council Teachers of Mathematics Meeting, Richmond.

Non-Refereed Publications

Flanagan, S.S. (1993). LPT - Mathematics instructional connections, Monograph.

Flanagan, S.S. (1991). A perspective on mathematics for Literacy Passport Testing: Teaching considerations. Monograph, The College of William and Mary.

Flanagan, S.S. (1988). Ideas for middle school mathematics to assist in Literacy Passport Testing. Monograph, The College of William and Mary.

Flanagan, S.S. (1983). Metric education curriculum guide, grades 7-12. U.S. Department of Education, Metric Education Division.

Flanagan, S.S. (1980). Metric education curriculum guide, grades K-6. U.S. Department of Education, Metric Education Division.

Flanagan, S.S. (1974). Mathematics: Activities that work. Richmond, VA: State Department of Education.

Workshops and Consultancies

Workshops

Numerous inservices and workshops for area school systems (over 30 in ten years).
Several workshops on Metric Education for area schools.

Consultancies

Recently appointed to Literacy Passport Testing task force to consider revisions for the State LPT Program.
Consultant to numerous Virginia school districts (over 50 consultations in 10 years).
Consultant to Charles City County Public Schools including two monthly on-site visits for two years.

Consultancies continued

Virginia State Department of Education Council of Mathematics Supervision.

Virginia International Mathematics Assessment Project for Virginia State Department of Education.

Served as external evaluator for several programs, Title IV for Virginia State Department of Education.

Senior Consultant to CBS Educational and Professional and Publishing Company for K-8 texts: Mathematics Unlimited, Holt, Rhinehart, & Winston, 1986.

Consultant to the Mathematics Curriculum Technology Committee for the Virginia State Department of Education, 1984 and 1985.

Evaluated/Compared texts (K-8) for CBS Educational and Professional Publishing, 1984.

Member of Virginia State Department of Education certification team to VPI & SU, 1984.

Consultant, Isle of Wight Public Schools. Evaluation of the results of the Title I program, Summer, 1983 and 1984.

Member, Virginia State Department of Education Title IV Validation Team, 1982.

Member, Virginia State Department of Education Standards of Learning Committee, 1982, 1988.

Consultant to Virginia State Department of Education. Developed test items in mathematics for graduation competency test.

Conference Formulation

Organized three major state-wide conferences on testing as related to the State Department of Education graduation competency test and Literacy Passport Testing program, (sponsored by William and Mary, directed by S. Stuart Flanagan).

Professional Awards, Editorial Positions, and Professional Affiliations

Awards

Awarded Shell Merit Fellowship by Cornell University

E.I. DuPont Fellow, University of Virginia

VCTM Teacher of the Year, 1990-1991 (William C. Lowry Outstanding Teacher of the Year).

Editorial Assignments

National Council of Teachers of Mathematics, Referee to the Editorial Panel of Arithmetic Teacher and Mathematics Teacher - have evaluated manuscripts for the past fifteen years.

Senior Consultant (editing) for K-8 mathematics series published by CBS Educational Publishing Company: Mathematics Unlimited, 1988. (Used by over 10% of K-8 students nationally)

Professional Affiliations

Virginia Council of Teachers of Mathematics, First President and Board Member

Virginia Council of Mathematics Supervisors

Peninsula Council on Mathematics of Virginia, Board Member, and 1st President (served two terms)

Greater Richmond Council of Teachers of Mathematics, Past President

National Council of Teachers of Mathematics, Government Leadership Representative for Virginia.

CURRICULUM VITAE

PETER SCOT BROUWER

DATE OF BIRTH: November 27, 1957

HOME ADDRESS: 15 Garden Street, Potsdam, New York 13676

HOME PHONE: (315) 265-6943

BUSINESS PHONE: (315) 267-2216

MARITAL STATUS: Married

EDUCATION:

Ph.D. in Mathematics Education (Computer Science Education concentration), University at Buffalo, 1993.

Ph.D. program in Computer and Information Sciences, University of Massachusetts at Amherst, Fall 1979 - Summer 1980.

M.A. (with Distinction) Mathematics, State University of New York, College of Arts and Science at Potsdam, 1979.

B.A. (Summa Cum Laude) Computer Science and Mathematics, State University of New York, College of Arts and Science at Potsdam, 1979.

TEACHING EXPERIENCE:

1993 - present: Associate Professor of Computer and Information Sciences, SUNY College at Potsdam.

1992 - 1993: Visiting Assistant Professor of Mathematics Education, University at Buffalo. Administered the Ed.M. program in Secondary Mathematics Education.

1986 - 1992: Assistant Professor of Computer and Information Sciences, SUNY College at Potsdam.

1980 - 1983: Instructor of Computer and Information Sciences, SUNY College at Potsdam.

RESEARCH EXPERIENCE:

1991 - present: Analysis of Student Computer Program Debugging Strategies (Ph. D. dissertation research project).

1987 - 1989: A Simulated Archeological Project, Continued development and conversion to Macintosh computer and Hypercard (with Dr. Marqusee).

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1982 - 1983: A Simulated Archeological Project, SUNY Grant for the Improvement of Undergraduate Instruction (with Dr. Marqusee).

1979 - 1980: Adaptive systems research and neural net simulations. Research Assistant. University of Massachusetts at Amherst.

1978 - 1979: Mathematical logic research investigating models of collective choice and social welfare. M.A. Thesis. SUNY College at Potsdam.

1978 - 1979: Research assistant - Supervising a psychology (operant conditioning) laboratory using a LSI-11 microprocessor for control and collection of data, SUNY College at Potsdam.

1978: Examination of statistical tests for dyadic behavior sequences. Undergraduate Research Participation Program, Indiana University.

WORK EXPERIENCE:

1983 - 1986: Senior Associate Programmer, IBM Corporation, Kingston, New York. Large-scale computer system software (VM/XA) design and development.

PUBLICATIONS AND MANUSCRIPTS:

Brouwer, Peter S., and others; forthcoming, "Computers in the Classroom: Mathematical and Social Implications", Proceedings of the 1993 Mathematics Education Study Group Annual Meeting.

Brouwer, Peter S.; forthcoming, "An Analysis of Student Debugging Strategies", Proceedings of the Third Annual Problem Solving Across the Curriculum Conference.

Barto, Sutton, and Brouwer; 1981, "Associative Search Network: A Reinforcement Learning Associative Memory", Biological Cybernetics, 40, 201-211.

Brouwer, Peter S.; 1980, "Games of Associative Search Elements", University of Massachusetts at Amherst, Computer and Information Sciences Department.

Brouwer, Peter S.; 1979, Collective Choice and Social Welfare. M.A. Thesis. Unpublished manuscript on file at SUNY College at Potsdam.

Brouwer, Peter S.; 1978, "Analysis of Tests for Dyadic Behavior Sequences", Undergraduate Research Participation Program, Indiana University.

BOOKS REVIEWED:

1992 : Object-oriented data structures textbook manuscript, Benjamin/Cummings Publishing Company.

1991 : Concepts of Programming Languages, by Robert Sebesta, Benjamin/Cummings Publishing Company.

1987 : Turbo Pascal textbook manuscript, Macmillan Publishers.

1982 : The Compleat Computer, Science Research Associates.

PRESENTATIONS:

Visualizing Mathematics Using a Computer. Communicating with Computers Conference, Canisus College, Nov. 1992.

An Analysis of Student Debugging Strategies. Third Annual Problem Solving Across the Curriculum Conference, Aurora, New York, June 1992.

Student Debugging Strategies. Learning and Research Fair, Potsdam College, March 1992.

Integrating Public Speaking and Critical Thinking into the General Education Curriculum. New York State Speech Communication Conference, Ellenberg, NY, October 1990.

Computer Science Careers in the 1990's. Potsdam College Computer Science Workshop for North Country Teachers, October 1990.

Critical Thinking: Theory and Practice. Speaking, Reasoning, and Research: Potsdam College General Education Conference, May 1989.

Software Development - Employment in Industry. Epsilon Delta Pi Induction, Potsdam College, April 1989.

A Simulated Archeological Project. Academic Computing Fair, Potsdam College, April 1989.

A Simulated Archeological Project. Innovations in Undergraduate Instruction: Model for the Nineties, Albany, NY, April 1988.

A Simulated Archeological Project. Academic Computing Fair, Potsdam College, March 1988.

Presidential Candidates Panel. Presidents' Scholars Program, Potsdam College, March 1988.

Software Development - Employment in Industry. Epsilon Delta Pi induction ceremony, Potsdam College, November 1987.

Summary of Critical Thinking Conference. Potsdam College General Education Workshop, October 1987.

Buddhism in North America. International Students Organization, Potsdam College, April 1987.

On Proofs and Programs. Pi Mu Epsilon Honor Society Induction, Potsdam College, November 1986.

Software Development - Employment in Industry. Association for Computing Machinery Local Speakers Program, Potsdam College, October 1986.

The VM/XA Operating System. Computer and Information Sciences Department presentation, Potsdam College, February 1986.

The Soul of a New Machine. Coordinator and lead presenter. Dean's Liberal Studies Colloquium, Potsdam College, March 1983.

Artificial Intelligence. Crumb Library Speaker Series, Potsdam College, Spring 1982.

Microcomputer Applications in Education. Microcomputer Applications Conference, Clarkson College of Technology, Potsdam, New York, October 1981.

Microcomputers and Society. College Community Week, Potsdam College, April 1981.

Computer Power and Human Reason. School-Within-A-School, Potsdam College, March 1981.

Cybernetics: Human and Machine Vision. Association for Computing Machinery Conference, Star Lake, New York, November 1980.

Cybernetics and Artificial Intelligence. Association for Computing Machinery Speakers Program, Potsdam College, March 1980.

CONFERENCES ATTENDED:

November, 1993: Association of Mathematics Teachers of New York State Annual Conference, Buffalo, New York.

May, 1992: Canadian Mathematics Education Study Group, Toronto, Ontario.

February, 1993: Association for Computing Machinery Special Interest Group on Computer Science Education national meeting, Indianapolis, Indiana.

November, 1992: Communicating with Computers, Canisus College.

June, 1992: National Science Foundation sponsored Object-Oriented Programming Workshop (follow-up), Rochester Institute of Technology.

June, 1991: National Science Foundation sponsored Object-Oriented Programming Workshop, Rochester Institute of Technology.

May, 1991: SUNY Faculty Computer Workshops (Hypercard, Windows 3.0), Syracuse University.

October, 1990: Teaching and Learning Symposium, Potsdam College,

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Potsdam, New York.

May, 1990: Where Does I Come From? Subjectivity and the Debate Over Computational Cognitive Science, University at Buffalo.

May, 1990: Students as Educational Researchers: Graduate Student Symposium, University of Buffalo.

March, 1990: Fifth Annual University at Buffalo Graduate Conference on Computer Science, University of Buffalo.

May 1989: Speaking, Reasoning, and Research: Potsdam College General Education Conference, Potsdam, New York.

August 1988: Sixth International Conference on Critical Thinking and Educational Reform, Sonoma State University, Rohnert Park, California.

April 1988: Innovations in Undergraduate Instruction: Model for the Nineties, Albany, New York.

May 1988: Discourse in the Classroom: Potsdam College General Education Conference, Potsdam, New York.

October 1987: Seminar in New Teaching Strategies, Potsdam College, Potsdam, New York.

August 1987: Fifth International Conference on Critical Thinking and Educational Reform, Sonoma State University, Rohnert Park, California.

October 1981: Microcomputer Applications Conference, Clarkson College of Technology, Potsdam, New York.

April 1981: Curriculum Advisory Council Conference, Star Lake, New York.

November 1980: Association for Computing Machinery Star Lake Conference, Star Lake, New York.

March 1980: International Conference on Cybernetics and Neural Modelling, University of Massachusetts, Amherst, Massachusetts.

February 1979: Syracuse University National Conference on Mathematics, Syracuse, New York.

COURSES TAUGHT:

SUNY College at Potsdam:

CIS 103 Introduction to Problem-Solving with Pascal
CIS 125 Statistics
CIS 203 Programming Structures
CIS 227 Computer Methods in Applied Statistics

CIS 281 The C Programming Language
CIS 282 C++ and Object-Oriented Programming
CIS 287 the PROLOG Programming Language
CIS 313 Problem-Solving with Pascal Programming
CIS 313 Problem-Solving with PL/I Programming
CIS 364 Information Systems Design
CIS 380 Legal and Social Aspects of Computing
CIS 403 Systems Programming and Operating Systems
CIS 405 Information Systems Analysis
CIS 421 Artificial Intelligence and Heuristic Programming
CIS 443 Programming Languages
CIS 490 Computer Science Internship
CIS 498 Tutorial Study

Clarkson University:

ECE 363 Data Structures and Algorithm Design (in Pascal)
ECE 363 Data Structures and Algorithm Design (in C)
MA 441 Operating Systems

University at Buffalo:

LAI 541 Seminar in Mathematics Teaching
LAI 544 Experimental Programs in Mathematics Education
LAI 544 Computer Technology in the Mathematics Classroom
LAI 548 Topics in Mathematics Pedagogy
LAI 643 School Mathematics from an Advanced Standpoint I
LAI 644 School Mathematics from an Advanced Standpoint II
LAI 699/451 Methods of Teaching - Mathematics

TEACHING INTERESTS:

Programming Languages
Artificial Intelligence
Role of Technology in Society & Social Impact of Computers
Problem-Solving Approaches
Programming and Data Structures
Structured Software Development
Operating Systems and Systems Development

RESEARCH INTERESTS:

Student Debugging Strategies
Programming Languages
Cognitive Studies of Programmers
Issues in Computer Science Education
Studies of Ethical Development in College Students
Social Impact of Computers
Role of Technology in Society
Problem-Solving Techniques
Computer Applications in Anthropology
Cognitive and Mental Maps

AWARDS AND GRANTS:

1989: President's Award for Excellence in Teaching, SUNY College at Potsdam.

1988: Merit Award for Teaching, Research and College Service, SUNY College at Potsdam.

1987: UUP New Faculty Development Award.

1982 - 1983: SUNY Grant for the Improvement of Undergraduate Instruction, A Simulated Archeological Project (with Dr. Steven Marqusee).

1981: Merit Award for Teaching, Research and College Service, SUNY College at Potsdam.

1979 - 1980: Research Assistantship, Computer and Information Sciences Department, University of Massachusetts at Amherst.

1979: Alcoa Foundation Award for Excellence in Computer Science.

1979: Eastman Kodak Scholarship Award.

1979: Honorary Member of the American Mathematical Society.

1979: Pi Mu Epsilon Senior Award.

1979: Departmental Scholar - Computer Science, Mathematics.

1978: Epsilon Delta Pi Inductee - Computer Science Honorary.

1977: Pi Mu Epsilon Inductee - Mathematics Honorary.

PROFESSIONAL ORGANIZATIONS:

American Educational Research Association (AERA)
Association for Computing Machinery (ACM)
Computer Professionals for Social Responsibility (CPSR)
National Council of Teachers of Mathematics (NCTM)
Association of Mathematics Teachers of New York State (AMTNYS)

COLLEGE ADMINISTRATIVE SERVICE:

Liberal Studies Council
Liberal Studies Access to Courses Ad-Hoc Committee
Liberal Studies Curriculum Committee
Academic Computing Advisory Committee
General Education Critical Thinking Coordinator
General Education Conference Planning Committee
Associate Coordinator of President's Scholars Program
Committee to Evaluate the President's Scholars Program
Faculty Assembly
Student Affairs Committee of the Faculty Assembly

Academic Programs Committee of the Faculty Assembly
Nominating Committee of the Faculty Assembly
Faculty Advisor for the President's Scholars program
Faculty Advisor for Epsilon Delta Pi (CIS Honor Society)
CIS Department Budget Committee
CIS Department Curriculum Committee
CIS Department Equipment Committee
CIS Department Recruiting Committee
CIS Department Student Appeals Committee
CIS Department Student Awards Committee

THOMAS J. WARD

Office	Home
313 Jones Hall	5575 Rolling Woods Drive
Williamsburg, VA 23185	Williamsburg, VA 23185
(804)253-4312	(804)220-0820

EDUCATION

The Pennsylvania State University, University Park, PA

Ph. D. in Educational Psychology awarded May, 1988. Doctoral Thesis: The Impact of Missing Data Techniques on Evaluation Research: A Case Study of the High School and Beyond Data Set.

M. S. in Educational Psychology awarded May, 1986. Thesis: The Effect of Providing an Outline to Field-Dependent and Field-Independent College Students Learning from a Lecture.

LaSalle College, Philadelphia, PA

B. A. in Psychology awarded May, 1983.
Psychology major with an emphasis in counseling.

WORK EXPERIENCE

August, 1989 to Present:	Assistant Professor of Education, The College of William and Mary, Williamsburg, Virginia. Primary Duties: Teaching graduate courses in research methods and statistics.
August, 1988 to August, 1989:	Assistant Professor of Educational Psychology, The Pennsylvania State University, University Park, PA. Primary Duties: Teaching graduate courses in statistics and managing the College Research Support Service.
August, 1987 to August, 1988:	Research Assistant, Instruction Support Center (ISC), The Pennsylvania State University, University Park, PA. Primary Duties: Development of a computer-based adaptive testing system; Management of Apple Macintosh and IBM Local Area Networks delivering on-line teasing and instruction.
August, 1983 to August, 1987:	Graduate Assistant, Program in Educational Psychology, The Pennsylvania State University, University Park, PA. Primary Duties: Teach lab sections for introductory courses in Educational Psychology and Measurement.
January, 1985 to May, 1985:	Instructor of Education, The Pennsylvania State University, DuBois Campus, DuBois, PA. Primary Duties: Teaching an introductory class in Educational Psychology and supervision of student teachers.

RESEARCH AND SCHOLARLY ACTIVITIES

Journal Articles

Ward, T. J. and Clark, H. T. (1991). A Reexamination of Public Versus Private School Achievement: The Case for Missing Data. ***Journal of Educational Research, 84 (3),*** 153-163.

Ward, T. J., Hooper, S., and Hannafin, K. M. (1989). The effect of computerized tests on the performance and attitudes of college students. ***Journal of Educational Computing Research*, 5** (3), 299-309.

Ward, T. J., and Clark, H. T. (1987). The effect of field dependence and outline condition on learning high- and low-structure information from a lecture. ***Research In Higher Education, 27*,** 259-272.

Cheatham, H. E., Tomlinson, S. M., and **Ward, T. J.** (1990). The African self-consciousness construct and African American students. ***Journal of College Student Development, 31,*** 492-499.

Clark, H. T., and **Ward, T. J.** (accepted) The effect of degree of test question encoding on the retention and retrieval of expository information. ***Journal of Educational Psychology*.**

Clark, H. T., **Ward, T. J.**, and Lapp, D. M. (1990). Field dependence and the solution of verbal and visual mathematics problems. ***Psychology*.**

Clark, H. T., Forlizzi, L. A., **Ward, T. J.**, and Brubaker, S. C. (1988). Detection and repair of inconsistencies in text by good, average, and poor college readers. ***RAL Report*, 5** (Summer), 8.

Herbert, J. T., and **Ward, T. J.** (1989). Rehabilitation counselor supervision: A national study of NCRE graduate training practice. ***Rehabilitation Education,* 3**, 163-175.

Herbert, J. T., and **Ward, T. J.** (1990). Supervisory styles among rehabilitation counseling practica supervisors. ***Rehabilitation Education, 4,*** 203-212.

Herbert, J. T., Hemlick, L. and **Ward, T. J.** (1991). Supervisee perception of rehabilitation counseling practica. ***Rehabilitation Education, 5,*** 121-129.

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Ward, T. J., Ward, S. B., and Ruby, S. (November, 1992). Multimodal assessment of the gifted: Connecting schools, families, and communities. Paper presented at the Statewide Conference for Project Mandala; Williamsburg VA.

Ward, T. J., Ward, S. B., Landrum, M. S., and Patton, J. (April, 1992). ***Examination of a proposed model for the identification of at-risk gifted learners***. Paper presented at the annual meeting of the American Educational Research Association, San Francisco, CA.

Ward, T. J., Ward, S. B., and Patton, J. (April, 1992). ***An analysis of the utility of The Matrix Analogies Test with at-risk gifted learners.*** Paper presented at the annual meeting of the American Educational Research Association, San Francisco, CA.

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Messier, L. P., and **Ward, T. J.** (October, 1991). ***A study of the prevalence of intellectually gifted and psychologically depressed adolescents in secure detention and learning centers.*** Paper presented at the annual conference of the Commonwealth Institute for Child and Family Studies; Virginia Beach, VA.

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Messier, L. P., and **Ward, T. J.** (October, 1992). ***Associations among giftedness, depression and family environment in secure detention.*** Paper presented at the annual conference of the Commonwealth Institute for Child and Family Studies; Virginia Beach, VA.

Messier, L. P., and **Ward, T. J.** (February, 1993). ***Giftedness and depression in detention settings.*** Paper presented at the annual meeting of the Virginia Federation Council for Exceptional Children; Richmond, VA.

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Grants

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EDITORIAL POSITIONS

Reviewer - Journal of Behavioral Education
Reviewer - Journal of Child and Family Studies

HONORS and AFFILIATIONS

Recipient of The Alexander Proudfoot Fellowship in Educational Psychology - 1984.
Member - American Educational Research Association
Eastern Educational Research Association

RELATED WORK

Project Mandala - Internal Evaluator for three year research and demonstration project for culturally diverse, low income, and handicapped gifted learners funded through the Jacob K. Javits Gifted and Talented Students Act, United States Department of Education.

Williamsburg-James City County School Division - External Evaluation consultant for Project Bright Beginnings funded by the VA Department of Education, The US Department of Education, and Williamsburg James City County Schools.

Westmoreland School Division - External Evaluation consultant for Chapter 1 innovations project.

Hampton City Public Schools - Office of Gifted Education - Evaluation and research consultant.

Minitab, Inc. - Evaluation consultant for new versions of statistical software.

Chester City Schools, PA - External Evaluation consultant for innovations project sponsored through the US Department of Education and the Pennsylvania Department of Education.

APPENDIX G

LOCAL SCHOOL (POTENTIAL TESTBED SITE) SUPPORT LETTERS

SCHOOL ADMINISTRATION BUILDING

Tenth and Court Streets
Post Office Box 1599
Lynchburg, Virginia 24505-1599

March 23, 1994

Mr. Don Bruno
Executive Director
Virginia Urban Schools Association
The College of William & Mary
The School of Education
Williamsburg, VA 23187

Dear Mr. Bruno:

It was exciting to hear from you regarding the possibility of our school division's participation in a technological experience which will combine computer aided instruction and cable television, thus allowing for in-home and selected small groups multimedia supplementary mathematics learning opportunities for urban children. The proposal which you shared with me will enable students in Lynchburg, Virginia to collaborate educationally with other children, thus expanding their access to mathematics experiences beyond the school setting. It is crucial that we continue moving forward in our efforts to join children with children and schools with homes.

The Lynchburg City Schools currently enrolls approximately 9,300 students in kindergarten through grade 12 and of that population, approximately 35% of those children are eligible for Chapter 1 services.

As you move forward in this proposal it will be instrumental that I make contact with representatives from the Lynchburg Cablevision Company and continue the upgrade of the television studio at Heritage High School. In addition to these efforts, Lynchburg City Schools plans to open a television studio at Dunbar Middle School. Our school division currently has small television studios at most of our elementary schools. The purpose of these studios is to deliver school news and items of interest to the students enrolled at each of the schools. At our middle schools and high schools we currently participate in the Channel 1 initiative which avails

"A Tradition of Excellence"

Mr. Don Bruno
March 23, 1994
Page Two

our secondary students and staff of current news events. I summarize this information to demonstrate the video capabilities available in the Lynchburg City Schools. Beyond our video efforts at each school, our school division is linked centrally through a video delivery and satellite collection service housed at the School Administration Building.

If the Lynchburg City Schools is selected for participation in this project, we would provide in kind support through the identification of exemplary teacher participants, designation of a school division coordinator and participation in the necessary training to make this effort successful.

As Division Superintendent, I think it is essential to provide an extension of the information highway to the members of the school community of Lynchburg, Virginia. Elsewhere, in the work place, we find the information highway extending into the banking industry, financial institutions, commercial enterprises and shopping markets in a cost efficient manner. It is my expectation that technology provide benefits to all persons residing in a community and that such technology be available to students who attend the public schools in our city. It is crucial that the benefits of this information highway accrue to those individuals responsible for the future of our country. These individuals, our children, require access to the services available through the development of this proposal which would bring the educational experiences, particularly multimedia supplementary mathematics learning opportunities into the schools as well as the homes of our city.

Thank you for taking the leadership in the development of this proposal and please advise me as to when our school division can provide further support as this proposal moves forward.

Sincerely,

James T. McCormick
Superintendent

JTM/mb
cc: Members, Lynchburg City School Board
Dr. Roger E. Jones, Assistant Superintendent for Curriculum and Instruction

FAIRFAX COUNTY
PUBLIC SCHOOLS

Robert R. Spillane, Superintendent
Burkholder Administrative Center
10700 Page Avenue
Fairfax Virginia 22030

March 22, 1994

Mr. Donald S. Bruno
Executive Director
Urban Superintendents Association of America
School of Education
The College of William and Mary
Williamsburg, VA 23187

Dear Mr. ~~Bruno~~ Don:

As you know, Fairfax County Public Schools supports the proposal, by the Urban Superintendents Association of America and the State University of New York at Albany, to provide in-home and selected small-group multimedia, supplementary mathematics learning opportunities for students by combining computer-assisted instruction and cable television.

Our school district currently has an enrollment of 139,000, and our school population includes 20,000 pupils eligible for Chapter One services. We currently have online cable delivery capacity with Media General Cable of Fairfax and have the following additional television delivery systems:

a) Six cable-channel capability (4 encoded and 2 open cablecast).

b) Fully equipped (five-camera) production studios with multi-capacity editing suites and graphical interface.

c) Video distribution capability of live, taped and satellite-delivered programs to the cable company, public television stations, and satellite uplinks.

d) Automated teleconferencing facility for low-budget, rapid turn-around productions.

e) Complete graphical design department to support print and production requirements.

f) Experienced school-production marketing division for distribution, assessment, and contract negotiations.

g) Nationally recognized professional staff to provide appropriate direction and support of local, regional and national programming.

If selected for participation in this project we would be willing to provide in-kind support to identify exemplary teachers who could work in this project, designate a school-district coordinator for the effort, and participate in the necessary training to make this effort successful.

As a superintendent of schools I am especially interested in providing an extension of the information highway to public schools. Fairfax County Public Schools has a national reputation as one of the best producers and users of telecommunications for education, if not the best. Advanced telecommunication technology is now being used cost-effectively by the banking industry, financial institutions, and commercial enterprises. It is time to share this technology and the benefits that accrue with the people who will shape our country's future: our children.

Sincerely,

Bud

Robert R. Spillane
Superintendent of Schools

/gms

Dobbs Ferry Union Free School District

SUPERINTENDENT OF SCHOOLS
Frank P. Tota, Ed. D.

March 24, 1994

Mr. Donald S. Bruno
Executive Director, USAA
School of Education
The College of William and Mary
Williamsburg, Virginia 23187

Dear Mr. Bruno:

The Dobbs Ferry School District supports the joint proposal developed by the Urban Schools Association of America and the State University of New York in Albany for computer assisted instruction and cable TV. When furnished, the grant will provide expanded and needed learning opportunities for our children in the home and schools, especially in the area of mathematics.

Dobbs Ferry includes two special schools, dedicated to students with severe needs. In addition, the Greenburgh and Tarrytown School Systems work closely with us in sharing resources in the area of mathematics and have asked to be part of the proposal as a member with Dobbs Ferry.

The combined enrollment would be over 5,000 with approximately half of the students minority and from the poverty level.

We work with TCI Cable Co. and will have a TV studio during the 1994-95 school year.

505 Broadway, Dobbs Ferry, New York 10522 914-693-1506 . . . Fax 914-693-1115

If selected for participation in this project, we would be willing to provide in-kind support to identify exemplary teachers that could work in this project, designate a school district coordinator for the effort, and participate in the necessary training to make this effort successful.

As district superintendent, I have a special interest in providing to the educational community an extension of the information highway to public schools. This technology is now being used by the banking industry, financial institutions, commercial enterprises, and shopping enterprises in a cost effect manner. I believe it is time to share this technology and the benefits that accrue with the people that will shape our countries future, our children.

Sincerely,

Frank P. Tota

FPT:gl
wp-11-TVgrant

Chesapeake Public Schools

Office of the Superintendent

Post Office Box 15204
Chesapeake, Virginia 23328

March 23, 1994

Mr. Donald S. Bruno, Executive Director
Urban Superintendents Association of America
School of Education
College of William and Mary
Williamsburg, Virginia 23187

Dear Mr. Bruno:

This letter is written to confirm our support for the proposal to combine computer-assisted instruction and cable television. We are particularly interested in providing in-home and small group multimedia learning opportunities in mathematics for our urban children.

Chesapeake Public Schools currently has an enrollment of 33,200 students and our school population includes a large number of pupils eligible for Chapter I services. We currently have on-line cable delivery capability with the TCI cable company. Also, we have our own television studio and television broadcasting teachers and classrooms.

If we are selected for participation in this project, we would be willing to provide in-kind support by identifying exemplary teachers who could work in this project. Also, we would be willing to designate a systemwide coordinator for this effort and to participate in the necessary training to make this effort successful.

As superintendent I have a special interest in providing to the educational community access to the information highway. This technology is now being used by the banking industry, financial institutions, and commercial enterprises in a cost effective manner. I believe it is time to share this technology and the benefits that accrue with the young people of our country.

Sincerely,

C. Fred Bateman

C. Fred Bateman
Superintendent

We Promote Excellence

The School Board of the City of Chesapeake adheres to the principles of equal opportunity in employment and in its educational programs, activities, and services.

BALTIMORE COUNTY PUBLIC SCHOOLS

Stuart Berger, Superintendent
Towson, Maryland 21204-3711

March 22, 1994

Mr. Donald S. Bruno, Executive Director
Urban Superintendents Association of America
School of Education
The College of William and Mary
Williamsburg, VA 23187

Dear Mr. Bruno:

This letter is written to confirm our school district's support for the proposal to combine computer assisted instruction and cable television to provide inhome and selected small group multimedia supplementary mathematics learning opportunities for urban children.

Our school district currently has an enrollment of 96,000, and our school population includes a significant number of pupils eligible for Chapter One services. We currently have online cable delivery capacity with Comcast Cable, Inc. We have a district studio from which we send original and re-broadcast programming to our schools and community. In addition, our district has been involved in a pilot distance learning project with our local telephone service provider. Several of our high schools are equipped with three-camera distance learning laboratories.

As you can see, we are not without experience. If selected for participation we would be willing to provide in-kind support to identify exemplary teachers who could work in this project, designate a school district coordinator for the effort, and have all parties participate in the training necessary to assure success.

As district superintendent I have a special interest in providing to the educational community an extension of the information highway. This technology is now being used by the banking industry, financial institutions, commercial enterprises, and shopping enterprises in a cost effect manner. I believe it is time to share this technology and the benefits that accrue with the people that will shape this nation's future, our children.

Sincerely,

Stuart Berger

Stuart Berger, Superintendent
Baltimore County Public Schools
(410) 887 - 4281

Roanoke
City Public Schools

Superintendent of Schools • P.O. Box 13145, Roanoke, Virginia 24031 • 703-981-2381 • Fax: 703-981-2951
E. Wayne Harris

March 21, 1994

Mr. Donald S. Bruno, Executive Director
Urban Superintendents Association of America
School of Education
The College of William and Mary
Williamsburg, Virginia 23187

Dear Mr. Bruno:

This letter is to confirm Roanoke City Public Schools' support for the proposal to combine computer assisted instruction and cable television to provide in-home and selected small group multi-media supplementary mathematics learning opportunities for the children of our district. Roanoke City Public Schools is an urban district with approximately 12,800 children. Almost 50% of our students come from low income families.

We currently have on-line cable delivery with Cox Cable Company of Roanoke. In addition we have a TV studio in the planning stages and hopefully will have the opportunity to work with the newly renovated Jefferson Center, which houses community agencies, the Symphony, the Opera Society, in the production studio.

This plan is also in line with the V-Quest goals and the community action component. This statewide systemic initiative with V-QUEST is part of the collaborative pre-service/in-service model program in mathematics, science, and technology.

If we are selected for participation in this project, we would be willing to provide in-kind support to identify exemplary teachers who could work with this project; designate a school district coordinator for the effort; and participate in the necessary training to make this effort successful.

As district superintendent I have a special interest in providing to the educational community an extension of the information highway to public schools. This technology is being used by the banking industry, financial institutions, commercial and shopping enterprises in a cost effective manner. I strongly believe it is time to share this technology and the benefits that accrue with the people who will shape our country's future—our children.

The Roanoke City Public Schools believe that all children can achieve at higher levels and must be challenged to reach their full potential and that all students must be adequately prepared for a changing society which requires life-long learning. It is to this end that we are committed to all of our students.

Sincerely,

E. Wayne Harris

E. Wayne Harris, Superintendent
Roanoke City Public Schools

Excellence in Education

BEST COPY AVAILABLE

SYRACUSE CITY SCHOOL DISTRICT
725 Harrison Street · Syracuse, NY 13210 (315) 435-4499

SUPERINTENDENT OF SCHOOLS

March 21, 1994

Mr. Donald S. Bruno, Executive Director
Urban Superintendents Association of America
School of Education
The College of William and Mary
Williamsburg, Virginia 23187

Dear Mr. Bruno:

This letter is written to confirm our school district's support for the proposal to combine computer assisted instruction and cable television to provide in-home and selected small group multimedia supplementary mathematics learning opportunities for urban children.

Our school district currently has an enrollment of 22,575, and our school population includes a significant number of pupils eligible for Chapter 1 services. We currently have on-line cable delivery capacity with Adelphia Cable Communications, and have additional television delivery systems which include a satellite downlink, professional production studio with taped and live broadcasting capability over the public access channel.

If selected for participation in this project, we would be willing to provide in-kind support to identify exemplary teachers that could work on this project, designate a school district coordinator for the effort, and participate in the necessary training to make this effort successful.

As district superintendent, I have a special interest in providing to the educational community an extension of the information highway to public school. This technology is now being used by the banking industry, financial institutions, commercial enterprises, and shopping enterprises in a cost effective manner. I believe it is time to share this technology and the benefits that accrue with the people that will shape our country's future, our children.

Sincerely,

Robert E. DiFlorio
Superintendent of Schools

RED/pc

Telephone number: (315) 435-4164
Fax number: (315) 435-4015

PORTSMOUTH PUBLIC SCHOOLS

P. O. BOX 998 • PORTSMOUTH, VIRGINIA 23705 • (804) 393-8751

FICE OF THE SUPERINTENDENT

March 21, 1994

Mr. Donald S. Bruno, Executive Director
Urban Superintendents Association of America
School of Education
The College of William and Mary in Virginia
Williamsburg, Virginia 23187

Dear Mr. Bruno:

This will confirm our recent conversation regarding this district's participation in and support of the special project being developed jointly by the Urban Superintendents Association of America and the State University of New York at Albany. The program's goals are laudable.

As of September 30, 1993, we had an enrollment of 17,921 students; our student population includes a significant number of youngsters who are eligible for Chapter 1 services. Cox Cable of Hampton Roads provides our on-line cable delivery capacity.

If the selection committee acts favorably upon our request to participate in this effort, we would identify exemplary members of our teacher corps who are willing to provide in-kind services, to designate a staff member to coordinate our systemwide efforts, and to provide appropriate opportunities for our employees to engage in the necessary staff development activities. In my professional judgment, I believe there are several positive benefits--provided the request is approved and implemented--that could accrue for our nation's most important national resource: our youngsters.

I can be contacted by telephone at (804) 393-8742, and materials can be faxed to me at (804) 393-5236.

Sincerely yours,

Richard D. Trumble

Richard D. Trumble, Ph.D.
Superintendent of Schools

w
Dictated by Dr. Richard D. Trumble and released in his absence

Salt Lake City School District
440 East First South
Salt Lake City, Utah 84111-1898 Tel: (801) 578-8599 Fax: (801) 578-8248

March 21, 1994

Donald S. Bruno, Executive Director
Urban Superintendents Assoc. of America
School of Education
The College of William and Mary
Williamsburg, Virginia 23187

Dear Mr. Bruno:

I would like you to know that Salt Lake City School District supports the proposal to combine computer assisted instruction and cable television in order to provide inhome, and selected small group multimedia supplementary mathematics learning opportunities for urban children. There are approximately 25,400 students currently enrolled in the Salt Lake City School District, and our school population includes many low-income families. Fifteen of our schools currently are Chapter I schools. We have on line cable delivery capacity with TCI Cable Company. We have two excellent television studios in two of our high schools and some additional capacity in our third high school.

Salt Lake City School District is interested in becoming part of this project and if selected would be willing to provide in-kind support to identify outstanding teachers that could work on this project, designate a school district coordinator to orchestrate the effort, and participate in the training to make the project successful.

As district superintendent, I am supportive of providing to the educational community an extension of the information highway to public schools. I think that technology has great potential to enhance the teaching/learning process. It is my understanding that the technology contemplated is now commonly used in the banking industry, financial institutions, and commercial enterprises in an efficient manner. I believe that it is timely for public schools to utilize this technology for the benefit of our students and future citizens. We have a genuine interest in being part of this project.

Yours very truly,

John W. Bennion

John W. Bennion
Superintendent of Schools

jw/JBCORR/125Bruno.let

Wichita Falls Independent School District
1104 Broad P. O. Box 2570
Wichita Falls, Texas 76307-2570
(817)720-3273
FAX (817)720-3228

Dr. Leslie V. Carnine
Superintendent

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March 20.1994

Mr. Donald S. Bruno, Executive Director
Urban Superintendents Association of America
School of Education
The College of William and Mary
Williamsburg, VA 23187

Dear Mr. Bruno:

Our school district, the Wichita Falls Independent School District, supports the proposal to combine computer assisted instruction and cable television to provide in-home, and selected small group multimedia supplementary mathematics learning opportunites for urban children.

Our school district currently has an enrollment of 15,489, and our school population includes a significant number of pupils eligible for Chapter One services. Forty-five per cent (45%) of our urban core of students are eligible for the free lunch program and are considered of low socio-economic status.

We currently have on-line cable delivery capacity with Vista Cablevision (Time-Warner, Inc.) and have the following additional television delivery system--broadcast studio at Kirby Junior High Math/ Science and Technology Center.

If selected for participation in this project, our District has in place exemplary teachers who have worked in multi-media learning. Our district has in place both a fully qualified WFISD coordinator for technology as well as a WFISD coordinator for technology training. These people would add their expertise to the effort to provide supplementary mathematics learning opportunities for urban children.

As district superintendent, I have a special and ongoing interest in providing to the educational community an extension of the information highway to public school. This technology is now being used by the banking industry, financial institutions, commercial enterprises, and shopping enterprises in cost effect manner. I believe it is time to share this technology and the benefits that accrue with the people that will shape the future of our country, our children.

Sincerely,

Leslie Carnine

Les Carnine
Wichita Falls Independent School District
(817-720-3273)

MORENO VALLEY UNIFIED SCHOOL DISTRICT

BUSINESS ADDRESS: 25634 Alessandro Boulevard, Moreno Valley, CA 92553
MAILING ADDRESS: 13911 Perris Boulevard, Moreno Valley, CA 92553

TELEPHONE: (909) 485-5600

BOARD OF EDUCATION
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SUPERINTENDENT OF SCHOOLS
Robert C. Lee

March 22, 1994

Mr. Donald S. Bruno, Executive Director
Urban Superintendents Association of America
School of Education
The College of William and Mary
Williamsburg, VA 23187

Dear Mr. Bruno:

On behalf of the Superintendent of Schools, I am writing this letter to confirm our school district's support for the proposal to combine computer assisted instruction and cable television to provide inhome, and selected small group multimedia supplementary mathematics learning opportunities for urban children.

Our school district currently has an enrollment of 31,200, and our school population includes a significant number of pupils eligible for Chapter One services. We currently have on-line cable delivery capacity with Cablevision and Cross Country Cable (wireless), and have additional television delivery systems connected to the Regional Educational Television Advisory Council (RETAC).

If selected for participation in this project, we would be willing to provide in-kind support to identify exemplary teachers that could work in this project, designate a school district coordinator for the effort, and participate in the necessary training to make this effort successful.

This district continues to demonstrate a special interest in providing services based on technology and wish to extend that service beyond the public school to the community. Receiving information from beyond the school boundaries is an essential part of this service.

Sincerely,

V. Paul Baird

V. Paul Baird, Ph.D.
Director of Information Literacy

VPB:rch

cc: Robert C. Lee, Superintendent

DAVENPORT COMMUNITY SCHOOL DISTRICT
ADMINISTRATION BUILDING • 1001 HARRISON STREET • DAVENPORT, IOWA 52803
THE BEST PLACE TO LEARN

OFFICE OF THE SUPERINTENDENT
PHONE 319-323-9951

March 22, 1993

Mr. Donald S. Bruno, Executive Director
Urban Superintendents Association of America
School of Education
The College of William and Mary
Williamsburg, VA 23187

Dear Mr. Bruno:

It is my understanding that a proposal is being submitted to combine computer assisted instruction and cable television in order to provide in home and selected small multimedia supplementary mathematics learning opportunities for urban children. Our school district, which is an urban school district with an enrollment of approximately 18,000 students, including 33% eligibility for Chapter 1 services, would be interested in such a program.

We currently have cable delivery capacity with the Cox Cable Company. We understand that if we are selected for participation in this project, we would be willing to provide in kind support in order to identify exemplary teachers who could work in this project. We would also designate someone in the school district who would be our coordinator for such an effort. Within reasonable limits, we would agree to participate in any necessary training to make this effort successful.

As district superintendent, I have a special interest in providing to the educational community an extension of the information highway to public school. This technology is now being used by private industry and in the State of Iowa, we are about to be linked up with the fiber optic network. We are in support of this proposal and the opportunities it will provide for the children of our school district.

Sincerely yours,

Peter Flynn

Peter Flynn, Superintendent
Davenport Community School District
Telephone Number 319-323-9951
Fax Number 319-323-3110

PF/dk
enc.

NEW YORK CITY PUBLIC SCHOOLS
COMMUNITY SCHOOL DISTRICT NINE
1377 JEROME AVENUE · BRONX, NY 10452

FELTON M. JOHNSON
Superintendent

(718) 681-6160
FAX (718) 681-7745

March 21, 1994

Mr. Donald S. Bruno, Executive Director
Urban Superintendents Association of America
School of Education
The College of William and Mary
Willamsburg, VA 23187

Dear Mr. Bruno:

This letter is written to confirm our school district's support for the proposal to combine computer assisted instruction and cable television to provide inhome, and selected small group multimedia supplementary mathematics learning opportunities for urban children.

Our school district currently has an enrollment of 30,161 and our school population includes a significant number of pupils eligible for Chapter One services. We currently have online cable delivery capacity with Cablevision, and have the ability to produce broadcast tapes.

If selected for participation in this project we would be willing to provide in-kind support to identify exemplary teachers who could work in this project, designate a school district coordinator for the effort, and participate in the necessary training to make this effort successful.

As district superintendent, I have a special interest in providing to the educational community an extension of the information highway to public school. This technology is now being used by the banking industry, financial institutions, commercial enterprises, and shopping enterprises in a cost effect manner. I believe it is time to share this technology and the benefits that accrue with the people who will shape our country future, our children.

Sincerely,

Felton M Johnson

Felton M. Johnson
Community Superintendent

FMJ:th

APPENDIX H

ASSESSMENT PLAN

Computer Assisted Instruction and Cable Television Network to Provide Inhome, Multimedia, Supplementary Mathematics Learning Opportunities for Urban Children

Evaluation Plan

Developed by
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College of William and Mary

March 21, 1994

Purpose

The purpose of the external evaluation for the project, "**Computer Assisted Instruction and Cable Television Network to Provide Inhome, Multimedia, Supplementary Mathematics Learning Opportunities for Urban Children,**" is to provide both a formative and a summative evaluation based on the prescribed purposes of the project. The formative evaluation component will be designed to provide ongoing feedback for program monitoring and improvement purposes. The summative evaluation component will be designed to determine the success of the project in attaining the established goals and objectives of the project as outlined in the project narrative.

Formative Evaluation

The theoretical framework for the formative aspect of the project evaluation will reflect a Context-Input-Process-Product (CIPP) evaluation design (Stufflebeam, 1983). The essence of the CIPP evaluation model, improvement, is captured by the author's identified purpose of evaluation, "not to prove but to improve" (Stufflebeam, 1983, p. 117). The four aspects of the evaluation will be used in this formative phase as follows:

- Context - to define the relevant environment, describe environmental conditions, identify needs and opportunities, and diagnose problems that prevent needs from being met and opportunities from being used;

- Input - to provide information for determining how resources are used in the project to meet the program goal and objectives, including human, technical, physical, financial, and time resources;

- Process - to provide periodic feedback to individuals responsible for implementing project plans and procedures, and to detect and predict procedural faults during implementation; additionally, to provide information for decisions and a record of the procedures as these occur;

- Product - to measure and interpret results at the end as well as during the project cycle, including devising operational definitions, measurements with predetermined standards, and interpreting outcomes in relation to context, input, and process information.

The formative evaluation component will focus on review, revision, and improvement of the project as it is developed and throughout its implementation. Specifically, the formative evaluation will offer suggestions for improvement as the project unfolds. Evaluative feedback will be provided through written reports and through periodic meetings with key project personnel. The formative evaluation component will be conducted concurrently with project implementation and will include documentation provided by the project staff as well as on-site visits to project sites by the external evaluation team.

Summative Evaluation

The summative evaluation for the project will reflect a goal-attainment model to evaluation. A goal-attainment model of educational evaluation "...conceives of evaluation chiefly as the determination of the degree to which an instructional program's goals were achieved" (Popham, 1988, p. 24). In this model, observable or measurable indices of performance are used to provide an objective basis for evaluation. Then, a comparison is made between intended outcomes (i.e., program goals) and actual outcomes (i.e., performance). Ralph Tyler (1942), credited with the emergence of goal-based evaluation, pioneered a methodology for comparing performance with goals - a process that can lead to improved performance and, ultimately, accomplishment of goals. It is this type of methodology that will guide the evaluation.

While the goal-attainment model to evaluation will be used as the theoretical framework, evaluative data that are collected and analyzed as part of the formative evaluation component (context, input, process, and product) will be reflected in the summative evaluation. In particular, project outcomes (i.e., products) will be assessed in terms of their impact on student learning.

Orientation. The summative evaluation component will be designed to assess the success of the project in fulfilling its stated purpose: to creatively use the new and emerging learning technologies to enhance the access, quality and productivity of learning opportunities available to urban students. Additionally, this goals-based evaluation will focus on success in accomplishment of the project's major objectives.

Design. As stated in the theoretical rationale, the evaluation will be designed to assess the degree to which the project accomplishes its stated objectives and its desired outcomes. Data will be collected through multiple data sources, including on-site observation, interview, analysis of artifacts of performance, documentation of accomplishments, and direct assessment of project participants. The following summarizes anticipated data collection techniques for the evaluation, included both qualitative and quantitative methods.

(1) Review of planning documents
(2) Attendance at planning meetings
(3) On-site observation
(4) Interviews with administrators, staff, and students
(5) Formal written survey of teachers and students
(6) Focus group meeting with staff and/or students
(7) Analysis of artifacts (i.e., computer utilization schedules)

Table 1 summarizes the specific types of data sources that are anticipated for use assessing the major components of the project.

Table 1
Data Collection Methods

	Document review	Planning Meetings	Observations	Interview w/ staff, admin, students	Formal Written Survey	Focus Group Meetings	Analysis of Artifacts
Process Objectives							
Develop math instructional program	X	X	X	X			X
Develop technology applications	X	X		X			X
Develop teacher training program	X	X		X			X
Intended Outcomes							
Use of technologies	X	X	X	X	X	X	X
Student learning in math program	X	X	X	X	X	X	X

Reporting. An evaluation summary report will be developed and provided to project administrators annually. The evaluation will be comprehensive in scope and will produce quantifiable data to support the attainment and quality of performance of project goals and objectives.

Intended Audiences

The primary audiences for whom this evaluation is targeted include the project staff, and sponsoring funding agency representatives.
Other audiences of interest include the various stakeholders, including those who would be directly affected by program implementation (students in the program, teachers and administrators in the public schools, educational technology developers and users). Additionally, policy and decision makers who have an interest in the use of technology in education are intended as target audiences.

Major Evaluation Activities

1.0 Preliminary discussions regarding evaluation
    1.1 Discuss with project representatives
    1.2 Review project proposal
    1.3 Attend project planning meetings

2.0 Develop evaluation model
    2.1 Develop preliminary draft based on theoretical considerations and needs of project
    2.2 Finalize model development

3.0 Develop evaluation design
    3.1 Meet with project representatives
    3.2 Determine scope of evaluation
    3.3 Refine evaluation design, including data collection and analysis procedures,
    3.4 Develop instrumentation

4.0 Collect Data

5.0 Analyze Data
    5.1 Tabulate data
    5.2 Analyze data statistically

6.0 Develop evaluation report
    6.1 Prepare formative and summative reports
    6.2 Submit reports

Standards for Conducting the Evaluation

The Joint Committee on Standards for Educational Evaluation (1981) standards will be used as guiding standards in the design and implementation of this evaluation. Specifically, the evaluation will be designed to adhere to the standards of utility, feasibility, propriety, and accuracy. All four standards will be considered in the evaluation: a) utility (e.g., report timeliness, evaluation impact), b) feasibility (e.g., practical procedures, political viability, cost effectiveness), c) propriety (e.g., human interactions, balanced reporting), and d) accuracy (e.g., validity, reliability, systematic data control, justified conclusions).

Evaluation Summary

Outcome oriented evaluation studies for projects such as this are of value to stakeholders and decision makers for obvious reasons: the evaluation is designed to answer questions related to the efficacy of the project as a whole, as well as analyzing the performance of critical component parts. While the evaluation will seek to determine success regarding outcomes, it is vital to understand that the evaluation also will be intended to provide for program improvement throughout the project.

Evaluation Team

The external evaluation team will include professors of education from the School of Education at the College of William and Mary whose background reflect the professional training, expertise, and experience needed for this evaluation.

- James H. Stronge, Associate Professor
- George Bass, Associate Professor
- Stuart Flanagan, Professor
- Thomas Ward, Assistant Professor
- Research assistant, TBA

In addition to training and experience which includes educational planning, evaluation, research methodology, statistics, mathematics education, and educational technology, the evaluation team members have directed and served in comprehensive evaluation projects, including for funding agencies such as the National Science Foundation, U.S. Department of Education, the Environmental Protection Agency, state education agencies, local school districts, and private industry. Please see the attached vitae for additional details regarding the qualifications of the evaluation team.

Institutional Capacity

The College of William and Mary, located in Williamsburg, Virginia, is America's second oldest institution of higher learning. Founded in 1693 by royal charter from King William III and Queen Mary II, it is a public university with a rich heritage. Between 1776 and 1781, the College adopted America's first elective system of study, introduced the Honor System, founded the first chapter of Phi Beta Kappa, and became the nation's first true university by uniting the faculties of law, medicine, and the arts. The College became a public institution in 1906, and Virginia's first co-educational college in 1918. Three United States presidents, four justices of the Supreme Court, and nearly 100 members of the United States Congress have studied at the College.

The College is a distinctive, highly selective university. In addition to 23 departments in Arts and Sciences, the College also has schools of Business, Education, Law, and Marine Science. The College offers 18 masters and 8 doctoral programs that currently enroll 2,100 graduate students. The College's largest single constituency, however, remains its undergraduate student body of approximately 5,400. The College attracts a high caliber of student, and admission is highly competitive. Based on acceptance rates and SAT scores, William and Mary is one of the most selective public universities in the United States.

The School of Education houses graduate programs in Elementary and Secondary Education, Reading, Museum Education, Special Education, Counseling, School Psychology, Higher Education, and Educational Administration. The Educational Administration Program, which will be providing the primary support for the project, offers Master's, Educational Specialist, and doctoral degrees.

Facilities and other resources that are available to the project include the following:

- Faculty offices, including computer equipment.

- Earl Greg Swem Library, containing more than 982,000 catalogued volumes, 32,000 rare books, 1,000,000 manuscripts, 1,000,000 microforms and microfilm pieces, 530,000 government documents, 5,500 subscribed periodicals, and 10,000 tapes, recordings, slides, films, and filmstrips. Among the services available through the library are computerized database searches, including CD ROM version of ERIC.
- Audio visual production facilities.
- Learning Resource Center, housed in the School of Education.
- Computer Center, including two fully-configured computer systems.

References

Joint Committee on Standards for Educational Evaluation. (1981). Standards for evaluations of educational programs, projects, and materials. New York: McGraw-Hill Book Company.

Popham, W. J. (1988). Educational evaluation (2nd ed.). Englewood Cliffs, NJ: Prentice Hall.

Stufflebeam, D. L. (1983). The CIPP model for program evaluation. In G. Madaus, M. S. Scriven, & D. L. Stufflebeam (Eds.), Evaluation models: Viewpoints on educational and human services in evaluation (pp. 117-141). Boston: Kluwer-Nijhoff.

Tyler, R. W. (1942). General statement on evaluation. Journal of Educational Research, 35, 492-501.